



The Future of Transportation Education: A Needs Assessment of the Transportation Management Program at San José State University



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MINETA TRANSPORTATION INSTITUTE

The Norman Y. Mineta International Institute for Surface Transportation Policy Studies (MTI) was created by Congress through the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and established in the California State University system at the San José State University College of Business. MTI continues as a University Transportation Center (UTC), reauthorized in 1998 by the Transportation Equity Act for the 21st Century (TEA-21).

MTI is unique among UTC's in two areas. It is the only center with an outside, internationally respected Board of Trustees, and it is the only center located in a College of Business. The Board provides policy direction, assists with needs assessment, and connects the Institute and its programs with the international transportation community. The Institute's focus on policy and management resulted from a Board assessment of the industry's unmet needs and led directly to the choice of the San José State University College of Business as the Institute's home. MTI applies the focus on international surface transportation policy and management issues in three primary areas:

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The Institute aims to provide policy-oriented research for all levels of government and the private sector, to foster the development of optimum surface transportation systems. Research areas include: security of transportation systems; planning and policy development; interrelationships among transportation, land use, the environment, and the economy; financing of transportation improvements; and collaborative labor-management relations. Certified Research Associates conduct the research. Certification requires an advanced degree, generally a Ph.D., a record of academic publications, and professional references. Research projects culminate in publication available both in hardcopy and on the Institute's website.

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**The Future of Transportation Education: A Needs
Assessment of the
Transportation Management Program at
San José State University**

June 2004

Dr. Linda O. Valenty

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16. Abstract <p>This research provides a comprehensive assessment of needs for the Graduate Transportation Management Program at San José State University. The study was commissioned by the Mineta Transportation Institute to examine the current graduate program in Transportation Management, including a Master of Science in Transportation Management and a Graduate Certificate in Transportation Management.</p> <p>The comprehensive needs assessment report investigates the best course for the future of the transportation management program at SJSU and provides advice regarding the manner by which the SJSU program may best proceed to meet the graduate education needs of transportation professionals. To achieve these ends, the overall analysis incorporated several components. These include a web-based examination of similar programs; a detailed analysis of student and alumni experiences and opinions; in-depth interviews with transportation professionals from California and across the country; and, an overview of the current state of distance learning and distance learning technology.</p> <p>These analyses reveal unique attributes possessed by the SJSU curriculum and programs, indicate areas in which the curriculum and programs may be expanded and improved, and specify ways in which the delivery of distance learning might be enhanced and made more competitive. Findings are directly applicable to the intent of the transportation management program to continue to evolve and respond to student and industry needs in design, management, and implementation.</p>			
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Linda O. Valenty

San Luis Obispo, California

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	1
INTRODUCTION AND PURPOSE	9
METHODOLOGY	11
SJSU PROGRAM BACKGROUND AND WEB-BASED ANALYSIS OF SIMILAR PROGRAMS.....	13
STUDENT AND ALUMNI RESPONSE	47
ANALYSIS OF CURRENT STUDENTS–STUDENT FOCUS GROUPS	47
ANALYSIS OF CURRENT STUDENTS–ONLINE SURVEY	55
ALUMNI FOCUS GROUP ANALYSIS.....	93
ALUMNI INTERVIEWS ANALYSIS	101
TRANSPORTATION PROFESSIONALS–INTERVIEWS AND ANALYSIS	113
THE STATE OF DISTANCE LEARNING	139
APPENDIX A: FOCUS GROUPS DESIGN AND QUESTIONNAIRE–STUDENT.....	149
APPENDIX B: ONLINE SURVEY–STUDENT.....	153
APPENDIX C: FOCUS GROUP DESIGN AND QUESTIONNAIRE–ALUMNI.....	163
APPENDIX D: ALUMNI INTERVIEW FORM.....	167

APPENDIX E: TRANSPORTATION PROFESSIONAL INTERVIEW FORM	169
ENDNOTES	173
ABBREVIATIONS AND ACRONYMS	175
BIBLIOGRAPHY	179
ABOUT THE AUTHOR	181
PUBLICATION PEER REVIEW	182

LIST OF TABLES

1. Program enrollment of respondents	60
2. Responses—appropriate range of courses in program	61
3. Responses—content relevant to career goals	62
4. Responses—course requirements reasonable	63
5. Responses—satisfaction with videoconferenced classes	64
6. Responses—opinion regarding online classes	65
7. Responses—portion of each class online	66
8. Responses—quality of instruction	67
9. Responses—knowledgeable faculty	68
10. Responses—faculty fair and unbiased	69
11. Responses—faculty consider student differences	70
12. Responses—faculty are accessible and available	71
13. Responses—faculty provide feedback	72
14. Responses—faculty concerned about student success	73
15. Responses—adequate services	74
16. Responses—adequate research resources	75
17. Responses—program valuable for career professionals	76

18. Responses—program reputation among transportation community	77
19. Responses—financial aid resources	78
20. Responses—MTI program met expectations	79
21. Responses—overall impression of Transportation Management Program	80
22. Responses—factors in enrolling/videoconferenced classes	81
23. Responses—factors in enrolling/cost	82
24. Responses—factors in enrolling/academic reputation	83
25. Responses—factors in enrolling/recommendations from colleagues	84
26. Responses—factors in enrolling/geographic location	85
27. Responses—program was first, second, or third choice	86
28. Responses—would you enroll here?	87
29. Responses—current enrollment status	88
30. Responses—current employment status	89
31. Responses—current GPA	89
32. Responses—gender	90
33. Responses—age	91
34. Responses—ethnicity	92

35. Transportation professionals organization types	113
36. Professional responses—preferred degree type	114
37. Professional responses—desired additional managerial training	116
38. Professional responses—desired additional coursework	123
39. Professional responses—need for short course continuing education	127
40. Professional responses—need for online course continuing education	129
41. Professional responses—type of online courses desired	131

LIST OF FIGURES

1. Range of courses in program	61
2. Content relevant to career goals	62
3. Course requirements reasonable	63
4. Satisfaction with videoconferenced classes	64
5. Opinion regarding online classes	65
6. Portion of each class online	66
7. Quality of instruction	67
8. Knowledgeable faculty	68
9. Faculty fair and unbiased	69
10. Faculty consider student differences	70
11. Faculty are accessible and available	71
12. Faculty provide feedback	72
13. Faculty concerned about student success	73
14. Adequate services	74
15. Adequate research resources	75
16. Program valuable for career professionals	76
17. Program reputation among transportation community	77

18. Financial aid resources	78
19. MTI program met expectations	79
20. Overall impression of Transportation Management Program	80
21. Factors in enrolling/videoconferenced classes	81
22. Factors in enrolling/cost	82
23. Factors in enrolling/academic reputation	83
24. Factors in enrolling/recommendations from colleagues	84
25. Factors in enrolling/geographic location	85
26. Program was first, second, or third choice	86
27. Would you enroll here?	87
28. Current enrollment status	88
29. Gender	90
30. Age	91
31. Ethnicity	92
32. Satisfaction of professional in-house training	125

EXECUTIVE SUMMARY

The future of transportation education will continue to be shaped by internal and external influences. Student aspirations and identified needs interact with a competitive environment, industry requirements, and advances in technology to affect the ongoing evolution occurring in the content and delivery of transportation education. The Mineta Transportation Institute and the Graduate Transportation Management Program at San José State University (SJSU) have initiated the current project to determine how they should best proceed to meet the education needs of transportation professionals. To accomplish that goal, this research includes a web-based analysis of competitors; interviews, focus groups, and online surveys of current students and alumni; interviews of transportation professionals; and a review of the latest information concerning the delivery of distance learning education.

Web-Based Analysis of Similar Programs: Findings indicate that the SJSU graduate programs in Transportation Management are unique in their determination to bridge the gap between traditional and distance learning. Findings also indicate that there are several features of other programs which could easily be incorporated into the existing curriculum to make SJSU more competitive on the national level. While moderate tuition, the flexibility of videoconferencing, and the urban location of SJSU in some ways sets it apart from local competitors such as UC Davis (UCD), the considerable institutional support of a UC environment and the presence (in the case of UCD) of an advanced practical lab present competitive obstacles that are difficult to surmount. An evaluation of similar programs indicates that a cooperative arrangement, in which some facilities are negotiated and shared, in the manner of the Southern Transportation Center Consortium (a co-op comprised of ten universities that share resources) might allow SJSU to become more competitive and to develop collaborative working relationships with Bay Area universities that offer similar transportation management programs.

The analysis of similar programs also indicates that another as yet unrealized opportunity for SJSU lies in offering modules in regional issues and specializations, including but not limited to coastal transportation, aviation, and environmental issues, thereby increasing the policy diversity of the program.

It is also recommended that SJSU consider the UC Irvine model in developing relationships with the surrounding communities to allow students to practice genuine transportation planning and develop practical skills.

From the evaluation of the University of Denver, a full low-residency program, comes the recommendation that SJSU consider offering a low-residency option to students who might otherwise be unable to attend this university—such as those currently working in other states or countries. The extremely high tuition required for most low residency programs would potentially make SJSU's more reasonable tuition quite competitive.

An evaluation of transportation planning and engineering programs indicates yet another area of potential expansion for the SJSU program. The development of stronger working relationships with engineering programs on the SJSU campus would enhance the ability of the transportation management programs to compete for students and for research grants.

Finally, the web-based analysis indicates that SJSU's transportation graduate programs would benefit considerably by the provision of joint conferences and/or jointly taught courses with an international university. The University of Swinburne in Australia and the University of New Brunswick in Canada are recommended as initial contacts. Each of these transportation management programs are innovative, competitive, and are located in fast-growing communities.

Student Experiences: Student focus groups and responses to online surveys indicate enthusiastic support and that the graduate programs are instrumental in advancing student careers. In fact, ninety-five percent of respondents stated that the program had met or exceeded their expectations. Students perceive faculty as extremely knowledgeable, accessible, and available for advising. Most students found financial aid resources to be adequate to their needs. Students did feel that the program would be greatly strengthened by the expanded use of outside speakers and an expansion in course offerings. Students would also like the program expanded to include students from other states and countries. Videoconferencing is very popular among students; however there were specific comments that professors need technological assistance and support, and the number of locations for videoconferencing should be expanded. Students also felt that international videoconferencing should be investigated as it would add dimension and depth to the program overall. Most students were not interested in courses that were 100 percent online; however, they perceived the distinct value of online content delivery as one component of a multifaceted course. In addition students would like to see an expanded online library with increased availability of online research resources.

Alumni Experiences: Interviews with alumni and an alumni focus group indicated similar attitudes. Alumni felt that the program was excellent, provided valuable experience and education, was cost-effective, and proved extremely beneficial to their careers. Overall, they recommended the program for its focus, methodology, and breadth. Like current students, alumni mention that they would like to see an expansion of course subject matter. Alumni favorably reviewed videoconferencing, describing it as the “jewel of the program,” and also mentioned that technology should be expanded to allow international students to participate. Alumni agreed that one important value of videoconferencing was the ability to communicate with other professionals from diverse geographic locations. In yet another similarity with current students, alumni enjoyed online instruction as one component of a class, but did not support a 100 percent online format for any course. Alumni were in agreement that the faculty was excellent, knowledgeable, professional, and responsive. Finally, alumni hoped that tuition for the program would eventually be fully supported by Caltrans for employees that take advantage of these graduate programs.

Graduate Education in Transportation Management—The View from Transportation Professionals: Telephone and online interviews conducted with transportation managers and executives from public and private sectors were used to determine how and whether the program should consider positioning itself in the higher education marketplace. A broad theme that emerged in interviews is the necessity of enhanced managerial training. In light of the continued emphasis on the acquisition of managerial skills—from transportation professionals and alumni, it is recommended that SJSU consider a joint MSTM/MBA degree as an option, facilitated by both programs and streamlined for students. This would augment their marketability in the field and increase their skill set. When considered in light of industry preference and student request, it certainly should be investigated as a possibility at SJSU.

Several transportation professionals suggested that students be required to write an “Educational Development Plan” early in their program, including academic plans and preliminary ideas for final projects. This requirement would teach students to develop personal plans of action, evaluate what it is they do not know and what they want to learn, teach students to take personal responsibility for the acquisition of skills and knowledge, and train them to visualize their future and make the decisions necessary to get them there.

Further, although a leadership course is offered in the curriculum, the concerted comments of students and professionals indicate that this component be even more strongly emphasized in the transportation management program.

Transportation professionals also suggested that a case-based curricular focus is highly valued, indicating that training should use transportation issues and policies to facilitate area-specific knowledge and the ability to apply general managerial, business, and quantitative skills to transportation problems.

Transportation professionals would also like to see transportation-specific courses that train students to develop, implement, oversee, and manage projects.

These interviews also uncovered a consistent theme—transportation professionals encourage programs to develop student writing and presentation skills. Accordingly, this report recommends that each student be assigned a mentor upon entry into the program, who would be available for assistance and consultation regarding improving these skills.

Transportation professionals mentioned the value of workshops offered by regulatory agencies. It is recommended that SJSU evaluate whether these workshops would be appropriate for advanced graduate students working on a related topic for their final project. The graduate program should also consider whether it could provide a scholarship for interested students.

Internships: It is recommended that SJSU investigate potential opportunities for collaboration with groups such as the Surface Transportation Policy Project. This would provide valuable experience and help graduates to integrate coursework into the realized needs of communities. SJSU is also encouraged to investigate international internships. If international internships are arranged for some of the best students, it would help to market the program, serve the students, and eventually benefit industry.

Short Courses: Interviews with transportation professionals indicate that a clear market for short courses exists in both private and public industry. The key is to design courses that teach skills and provide updates necessary for the successful transportation professional. Short or weekend-intensive courses focusing on emerging issues, regulatory changes, and changes in relevant law at the state and national level were mentioned by transportation professionals as extremely useful. These could be marketed to public and private organizations across the

country. Transit professionals could be brought in as adjunct lecturers to run these intensive courses.

SJSU could also offer an “Update in Emerging Issues in Transportation” intensive weekend course twice a year and market this to professionals working in the field. Intensive weekend courses that develop writing skills and train managers in public speaking and the clear presentation of quantitative material would be well received and marketable to a wide variety of managers.

In addition, short courses on the use of relevant transportation software would be popular and useful for current students as well as managers from public and private industry.

Training in forecasting, benefit-cost analysis, cost-effectiveness analysis, and other quantitative methods in transportation policy would also be useful and relatively easy to market.

SJSU should not attempt to market a short intensive course that is 100 percent online at this time. Using online delivery as a component of a short course in which the students meet in person or teleconference will be more popular. The teleconferencing approach has support from students and professionals alike. However, if the SJSU Graduate Program in Transportation Management does decide to attempt to market an online course, it is the opinion of professionals and students alike that this course be quantitative in nature, with constrained subject matter, clear goals, and achievable objectives.

Delivery of Distance Learning Education: A review of the latest published information concerning delivery of distance learning education was conducted and synthesized for the report. Results indicate that for students and professors, real-time interaction when combined with facilitated asynchronous learning create the best environment for intellectual growth. Synchronicity in the virtual classroom maintains the ability to teach and mentor with real-time interaction between professor and student—allowing for interaction between professor and students, clear demonstration of skills, immediate feedback, networking, and exposure to other students with diverse sets of experiences and backgrounds. Asynchronous components allow students to work at their own speed through assignments as they would have done, even in the traditional classroom.

This report recommends bringing executives into the virtual classrooms as guest speakers through videoconferencing, encouraging professors to hold virtual office hours with a video

camera present in their office and using current technology to facilitate two-way communication, providing incentives to professors to visit and deliver lectures from at least two video-conferenced sites during each course, building a virtual community in every course with interactivity and synchronous as well as asynchronous course content delivery, assignment of a technical assistant to every professor for every session, and consideration of using CourseWork software instead of WebCT—it is free, easier to use, more powerful, and available for download from the web.

In addition, in the interest of facilitating networking and collaboration, it is recommended that the graduate transportation management program invite all students to class orientations at the beginning of each semester, providing a venue for instruction in the use of the technology and an opportunity to encourage students to get to know one another and to develop virtual project teams.

Marketing Recommendations

The Graduate Program: Since most of the SJSU transportation management graduate students are currently California residents, marketing the program nationwide, and perhaps internationally, should be seriously considered. In marketing the program, it is recommended that SJSU emphasize the ongoing and high-profile research projects at the Mineta Institute and the active involvement of graduate students in these research efforts, thus raising the visibility and reputation of the SJSU program. In the presence of UC level competition, SJSU marketing should focus on its affordability and its utilization of cutting edge education technology.

If SJSU's transportation management program is able to develop stronger working relationships with the engineering programs on the SJSU campus, these connections should be emphasized in marketing materials—as they make the program more competitive, enhance content, and may provide an important theme in marketing efforts. Along these lines, either allowing students to take courses in the MBA program or offering the option of a joint MSTM/MBA would provide yet another selling point for the SJSU program while meeting the needs of current and future students that would like to market their skills to private industry.

Marketing the program internationally will require contacts with international universities that have facilities that allow participation in the videoconferenced classroom. Students are very excited about the prospect of working with, learning with, and understanding a variety of

perspectives. At the very least, the SJSU program can facilitate and market the idea of global chatrooms for students to discuss transportation policy, projects, and problems with their international colleagues.

Short Courses: Short or weekend-intensive courses on emerging issues, regulatory changes, and changes in relevant law at the state and national level were mentioned by transportation professionals as extremely useful and popular. The AASHTO short courses may provide ideas for intensive courses that could be offered by SJSU. SJSU intensive weekend courses could be marketed through the webpages of professional conferences specializing in public policy, public administration, or transportation issues.

State DOTs are a ripe market for short courses such as these. It is clear that state DOTs have educational needs and often combine those needs with distributed videoconferencing facilities that emulate Caltrans. These state agencies are most often interested in short courses identified above. They usually have dedicated funds for training and travel and should represent the next foray for marketing attempts on the part of the graduate transportation management programs at SJSU. Competition for these available funds usually comes from agency workshops and/or state level provision of in-house education programs. SJSU is therefore in a unique position to differentiate itself and effectively market these short-term intensive courses as occurring in a university format.

Once a short course format is implemented, assessment of student satisfaction and learning outcomes could be used for additional marketing. An instrument distributed to students before they leave the course could give immediate feedback. These results are then used to market later courses.

It is recommended that transit professionals be recruited to teach the short intensive courses; this fact could be highlighted in marketing materials.

Satellite downlinks should also be considered for nationwide and international courses (budget allowing). Marketing the teleconferenced course or satellite downlinked course would be much easier and more profitable for the institute.

Overall, the SJSU Graduate Transportation Management Program is to be commended for their unique combination of traditional education and cutting edge distance learning.

Implementing the recommendations in this report will allow for expansion and continued innovation.

INTRODUCTION AND PURPOSE OF THE NEEDS ASSESSMENT

In 1996 the Graduate Transportation Management Program (GTMP) was initiated at San José State University (SJSU). With the support of the Mineta Transportation Institute (MTI), the GTMP now includes a Master of Science in Transportation Management and a Graduate Certificate in Transportation Management.

The current assessment of needs has been designed to determine how the program should best proceed to meet the graduate education needs of transportation professionals. The specific purpose of this needs assessment is to determine the best course for the future of the transportation program at SJSU.

UNIQUE QUALITIES OF THE PROGRAM AND APPROPRIATENESS WITHIN THE FIELD

This analysis addresses the extent to which instruction overlaps and/or competes with that offered by other institutions. Among the specific research questions to be addressed are the following:

- In what way and to what extent are the SJSU curriculum and associated degree in transportation management unique when compared to other available programs?
- To what degree have the existing configuration of strategies and resources successfully achieved the program's objectives?
- What are the projections for success of the present configuration? Will it maintain a viable program?

POTENTIAL EXPANSION OF THE CURRICULUM

A second major concern is the continuing financial viability of the program. To date, much of the program's financial support has come with funds secured from federal support for the MTI. Among the specific research questions to be addressed are the following:

- In the event that federal support decreases or ceases, how can the program develop and expand its financial resources?

- In the interest of generating additional support and enhancing existing support for the program, should the curriculum be modified and/or expanded to include private management subjects?
- Either alternatively, or in conjunction with a shift toward private management subjects, should the program be modified to offer more specialized degrees or certificates that serve specific markets and education needs?

TEACHING TECHNOLOGY

Third, with its statewide (and possibly national) foundation for student enrollment, the program to date has endeavored to embody state-of-the-art technology for distance learning. However, in this era of rapid technological change—particularly with respect to information technology—new potential means of program delivery may be practical as successors or complements to the technology currently used by the program. Among the specific research questions to be addressed are the following:

- What technologies currently exist to enhance the delivery of distance learning in the GTMP?
- Which of these would optimize the resources of the transportation management program?
- Is the program competitive with respect to the use of emerging technologies by competitive institutions?

The findings are directly applicable to the design, management, and implementation of the program.

METHODOLOGY

This study incorporates a variety of techniques and data sources, including the following:

- **Webpage Search/Analysis**—A comprehensive search and analysis of the websites of other transportation-related education programs has been conducted. This data is used to determine the unique qualities of this program and the nature of potential competition.
- **Focus Groups**—Focus groups were conducted with students and alumni to gain in-depth, qualitative information about student experiences with the program and applicability of the program to student careers in transportation management.
- **Online Surveys**—Online surveys generally tend to have higher response rates than mailed surveys, and so were used in this venue. Online surveys were sent to current students to collect information with regard to the quality and appropriateness of the program's present configuration. Respondents received surveys uniquely designed to query their exact needs and determine their specific evaluations.
- **Telephone Interviews With Alumni**—Alumni were interviewed individually to determine their experiences and perspectives regarding the transportation management graduate programs.
- **Interviews with Transportation Professionals**—Telephone and online interviews were conducted with transportation managers and executives from the public and private sectors. These data are used to determine how and whether the program should consider positioning itself in the higher education marketplace.
- **Literature Review/Bibliographic Search**—A review of the latest published information concerning delivery of distance learning education was conducted and synthesized for the report.

PROGRAM BACKGROUND AND WEB-BASED ANALYSIS OF SIMILAR PROGRAMS

The International Institute for Surface Transportation Policy Studies (IISTPS) was created by Congress through the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) and established in the California State University system at the San José State University College of Business. In 1995, IISTPS was re-named as the Norman Y. Mineta International Institute for Surface Transportation Policy Studies, which became simply the Mineta Transportation Institute (MTI). MTI continues as a University Transportation Center (UTC), reauthorized in 1998 by the Transportation Equity Act for the 21st Century (TEA-21).

MTI is unique among UTC's in two areas. It is the only center with an outside, internationally respected Board of Trustees, and it is the only center located in a College of Business. The Board provides policy direction, assists with needs assessment, and connects the institute and its programs with the international transportation community. The institute's focus on policy and management resulted from a board assessment of the industry's unmet needs and led directly to the choice of the San José State University College of Business as the institute's home.

SJSU'S CURRENT TRANSPORTATION MANAGEMENT PROGRAM

The San José State University College of Business, with support from the Mineta Transportation Institute, currently offers two degree programs. The following information is from the program website in 2003:

The AACSB accredited **Masters of Science in Transportation Management (MSTM)** program requires the graduate student to attain 30 units via six core courses, three electives, and one cumulative experience capstone course. Admission requirements include an undergraduate degree from an accredited institution, a 3.0 GPA for the last 60 units of accredited course work, and a 500 on the GMAT. Students who do not possess either a bachelor or master's degree from a postsecondary institution where English is the principal language of instruction must receive a minimum of 550 on the Test of English as a Foreign Language (TOEFL).

The **Certificate in Transportation Management (CTM)** requires the student to acquire 12 units by taking any four core courses from the required six in the MSTM

list, or three core courses and one elective. Students must have completed an undergraduate degree; however there are no GPA or GMAT requirements for the certificate program. However, if the students does not possess either a bachelor or master's degree from a postsecondary institution where English is the principal language of instruction, they must receive a minimum of 550 on the TOEFL.

Technology: Two-way live video conferencing has been adapted for use by the graduate programs in transportation management. These courses originate at San José State University in the College of Business' virtual classroom and extend to 12 Caltrans district offices in California. Under particular circumstances that prevent a student from attending classes at Caltrans sites, the option of live streaming is available. Students may register online for both programs.

Cost and Financial Assistance: Tuition for the program has currently been set at \$750.00 per course. Fellowship assistance of up to \$4000 per semester is available for M.S. students.

Courses offered by the SJSU Mineta Transportation Institute programs (Course descriptions reprinted from the online catalog):

Core Courses:

- **MTM 201: Fundamentals of Transportation Management**—Provides a common core of surface transportation knowledge for further MSTM courses. Includes discussion of the historic development of transportation economics, policy, and culture. Reviews stakeholders whose commitment is necessary to create and sustain a successful transportation entity.
- **MTM 202: Accounting, Finance and Business Systems**—Introduces financial and managerial uses of accounting information systems and concepts. Includes standard costs, cost-volume-profit relationships, contribution analysis, budgeting, performance measurement, variance analysis, working capital, valuing capital costs, and financing investment decisions. Explores use of complex information decision systems.
- **MTM 203: Transportation Markets and Business Development**—Emphasizes positioning services to meet the needs of particular groups and market segments, and marketing the system to new users and user groups (including developing the public/private sector relationship). Examines strategies for developing the

community relationship with marketing and public relations efforts (and using the media to advantage).

- **MTM 214: Transportation Policy and Regulation**—Surveys political frameworks of governments as both customer and provider; development of transportation policy with public involvement; and performance measurement with public oversight. Reviews policy impact on intermodal development in seeking to manage public and private objectives and diverse agendas of federal, state, and local agencies.
- **MTM 215: Transportation Systems Planning and Development**—Examines transportation system development interrelationships with land use, environmental management, and urban planning. Includes realities of politics, public administration, regulations and financing alternatives. Extends to construction administration including governmental approvals, specification development, contracting law and regulations, and fiscal control.
- **MTM 217: Leadership and Management of Transportation Organizations**—A study of the human resource aspects of managing transportation systems, including labor/management collaboration/negotiation and consultative employee relations programs. Builds skills in leadership and team building within the context of bringing about organizational change in a complex transportation system.

Electives:

- **MTM 290: Strategic Management in Transportation**—Provides a culminating experience through an individual comprehensive project. A variety of external learning experiences (internships, field assignments, and mentoring), in-class case discussions and exercises provide a capstone seminar with practice in strategic planning to positively impact market environments in surface transportation. 3 units. Requires prior completion of 21 MSTM units.
- **MTM 283: Research Internship**—With approval of the program administrator and the Research Director, students may apply for an internship with MTI. A research team, consisting of a student cohort group and/or MTI Research Associates, will conduct research related to a specific aspect of surface transportation management. (An opportunity exists to incorporate this internship with research related to the student's employment.)

- **MTM BUS 286: Project Management**—Introduces Project Management and identifies the tools and techniques to resolve problems associated with bringing projects in on time and within an established budget. Discussion will include topics such as project scheduling, PERT/CPM resource leveling, team dynamics and cost estimates. The student will learn how to develop project proposals and project reports.
- **MTM 296A: Transportation and the Environment**—This class examines the relationship between transportation and the environment with an emphasis on legal issues. Among the topics class sessions will address, are the Clean Air Act, vehicle inspection programs, land use planning, transportation demand control techniques, vehicle mileage standards, environmental impact reports, diesel engine controls, and contaminated property.
- **MTM 296B: Labor Relations in Transportation**—This class provides grounding in labor laws and the development of public sector unions. It also emphasizes contract negotiation and managing under a union contract. To these latter ends, the class contains a negotiation simulation, and students are asked to examine a variety of arbitration cases involving: the right to organize, management rights, established practices, the necessity to arbitrate and the test of individual grievances.
- **MTM 297: Current Topics in Transportation**—Guest speakers introduce key issues facing California transportation leaders—from land use decisions and funding, to the tasks facing city, county and state officials. Speakers will present their talks for 30-40 minutes at the start of class, followed by a question-and-answer session.

WEB-BASED ANALYSIS OF SIMILAR PROGRAMS

The Mineta Transportation Institute 2003 Comprehensive Needs Assessment begins with an analysis of the websites of other transportation-related education and distance-learning education programs. Transportation-related education programs are evaluated based upon the following attributes:

- The nature of potential competition
- Unique qualities of Mineta Transportation Institute's Transportation Management Program
- Characteristics of selected programs that might be considered for adoption

Details for all selected programs follow the Summary of Findings and Recommendations.

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The SJSU transportation management graduate programs represent a unique combination of traditional education and cutting edge distance learning. They are, in fact, quite unusual in this regard. No other program found has made such a determined attempt to bridge the gap between traditional and distance learning. However, it is also clear that there are several features of other programs which could easily be incorporated into the existing curriculum to make SJSU more competitive on the national level.

The moderate level of current tuition and the physical location of SJSU in some ways sets it apart from local competitors such as UC Davis. Although SJSU's program is primarily one of distance learning, the perception that the university is located in an urban area has a very positive impact. In addition, students who receive the high level of flexibility offered by videoconferencing programs will not need to address the issues of cost-of-living that traditional Bay Area students face. UC Davis remains one of the main threats to this program, through their similar levels of cooperation with Caltrans and considerable institutional support. UCD is desirable to many as a transportation management program because of the presence of an advanced practical lab that allows students to work with solar technology and state-of-the-art traffic modeling. Obviously, it would be very difficult for SJSU to construct its own lab, particularly considering the focus on distance learning. However, it may be possible to work with UCD to provide students access to their lab after the manner of cooperation visible in the Southern Transportation Center (STC) consortium.

The STC is a co-op comprising ten southern-region universities, shared resources, and similar institutional, corporate, and government support. Because SJSU students need not be physically present at the university, were SJSU to attempt to develop such a cooperative program within the western region of the United States, the resources of several universities could be pooled. Interestingly, none of the members of the STC have the level of distance-learning technology that SJSU has developed, nor do any of them offer the kind of liaison with state level agencies such as Caltrans. Only the University of Florida approaches the kind of non-traditional learning technologies that SJSU offers. Therefore, a joint effort among western, or even San Francisco Bay Area universities, has the potential of creating powerful competition for other programs across the country.

Another distinct area of opportunity for SJSU lies in the fact that several of the examined universities focus on regional specialties vital to their respective areas. It would be beneficial for SJSU to offer modules in regional issues and specializations, including coastal transportation issues, aviation, and other areas of interest to students and industry, thereby increasing the policy diversity of the program.

UC Irvine also has an innovative approach which should be studied for possible adaptation to the SJSU programs. The college itself has a relationship with the multi-racial suburb of Costa Mesa, allowing students to practice genuine urban planning and practical skills. This would be a simple matter—SJSU could establish such a relationship with any number of San Francisco Bay Area suburbs.

The three UC-level schools herein considered all have the advantage of UC-level funding and name recognition. In marketing its own program, SJSU should focus on its affordability and focus on cutting edge education technology in order to compete in a market that includes the University of California system.

The University of Denver comes closest to rivaling SJSU in distance-learning technology. It is, however, a full low-residence program, different from SJSU's technique of videoconferencing within the pre-existing structure of Caltrans. It requires five seven-day residencies, which is, incidentally, quite high for a low-residency program. Most similar programs of study require only bi-annual residencies. SJSU's students are generally located within the state of California, whereas UDenver's students may reside anywhere, so long as they travel to Colorado for the required residencies. It is an interesting approach, and is perhaps worth noting that SJSU could consider offering this as an option in the future, specifically as an alternative to the current quasi-residential program, but not a replacement. The extremely high tuition for this 15-month program—over \$42,000—will deter many students. It is, therefore not in competition for the same student pool; however, the distance-learning aspect of their curriculum is worthy of further attention.

In addition, the University of Denver, no doubt in part because its professors are not burdened with daily lectures, takes part in a number of unusual research projects. One example is their study of human fatigue patterns as they relate to transportation planning. If SJSU could involve more of its professors and students in high-profile research projects such as this one, it would raise the visibility of the SJSU program, as well as allow students more opportunities to explore high-level research in transportation management.

In the area of corporate sponsorship, the University of Arkansas has taken the concept to a unique level. As the headquarters of Wal-Mart Inc. are nearby, UA Fayetteville has been taken almost entirely under the wing of that corporation, to the extent that they have named their program for Sam Walton, the company's founder. Their program is predicated and dependent upon the financial support of Wal-Mart. While corporate sponsorship is an excellent source of revenue, the UA lacks the sort of corporate sponsorship diversity that would lead an applicant to believe they were being trained objectively. The Silicon Valley area provides an ample number of possible public and private sponsors, and SJSU is in a position to benefit from this multiplicity of financial opportunities. Accordingly, care should be exercised in order to avoid the situation in which UA has placed itself, dependent primarily upon one sponsor and the appearance of having become a feeder for Wal-Mart management positions.

The University of Wisconsin at Madison has chosen to focus its program in large part on finding environmentally friendly methods of transportation planning and management. There is hardly a better area in the country for this kind of research and interest than the Bay Area, which is politically supportive of such attempts, as well as in need of results in this arena. The weakness of UW Madison is the extent to which it focuses on this problem. Creativity and diversity in the SJSU transportation programs should be encouraged. SJSU has the opportunity to incorporate the specialties of a variety of programs including Wisconsin's environmental approach, Iowa's rural focus, and Florida's concern with creative coastal transportation.

Transportation engineering programs are included here because many of the finest transportation planning programs are found under the auspices of engineering. At some date it may become advantageous for SJSU to develop stronger working relationships with the engineering programs on the SJSU campus. This would enhance the ability of the transportation management programs to compete for students and funding.

This study also found, but did not include for analysis, several international universities which offered solid programs with viable distance learning or low-residency options, such as the University of Swinburne in Australia, and the University of New Brunswick in Canada. Both of these programs are innovative, competitive, and are located in fast-growing communities. They represent programs that should be studied for potential in two areas. First, SJSU's graduate transportation programs would benefit considerably by the provision of joint conferences and/or jointly taught courses with an international university. This opportunity exists and should be thoroughly investigated—the indicated programs are naturals for initial

contacts in this regard. Second, keeping track of innovations in these international programs could provide ideas for innovation at SJSU in either curriculum or methods for distance learning.

DETAILED BREAKDOWN OF INDIVIDUAL PROGRAMS

The Modified SWOT Framework¹

Each evaluated program is compared to SJSU with a modified SWOT framework so as to identify strengths and weaknesses of the evaluated program. The framework then evaluates opportunities for SJSU that become apparent after study of the strengths and weaknesses of the selected program. Finally, the modified SWOT analysis allows an evaluation of threats that exist for SJSU transportation management programs with specific reference to the competitor program.

Strengths and Weaknesses–The Evaluated Program. Strengths and weaknesses are evaluated as internal factors within each evaluated competitor program. Accordingly, *strengths* indicate areas of program excellence, while *weaknesses* point to areas where the evaluated program is potentially vulnerable.

Opportunities and Threats–San José State University. The notions of opportunity and threat are identified as external influences that SJSU's Transportation Management programs may respond to. *Opportunities* might be markets that are susceptible to development, areas of potential alliances, or other possibilities for growth within the SJSU program. *Threats* are indications of potential competition, specifically areas in which innovation or change might move SJSU into a more advantageous position.

MODIFIED SWOT ANALYSIS OF COMPETITIVE TRANSPORTATION MANAGEMENT PROGRAMS

The first section includes Masters of Science in Transportation Management programs and Certificate Programs in Transportation Management or Policy. The second section includes programs that offer a specialization in Transportation Engineering and Management.

University of Arkansas, Fayetteville—Strengths and Weaknesses

Strengths

Fayetteville, while a small community, has been energized by the presence of the corporate headquarters of Wal-Mart in the near vicinity. Students will have a chance to take part in the rapid growth of a new urban center, a unique experience.

- Accelerated one-year program available.
- Member of the Southern Conference of Graduate Schools.
- Limited distance learning available.
- Low cost of living.

Weaknesses

- UAF is extremely dependent on Wal-Mart. The School of Business is named for Wal-Mart's founder and leans heavily on the company for corporate funding and internships.
- Wal-Mart is almost exclusively responsible for external sources of funding at this university.
- Fayetteville, while proximal to a rapidly growing area, is not itself a high-growth zone. It is a small town that relies on the dynamism of its surrounding areas for much of the resources a student of transportation would require.
- No certificate programs available.
- No federal or state-level partnerships are apparent.
- High tuition.

Opportunities and Threats for San José State University

Opportunities

- UAF appears to be a very isolated program with few connections outside of Wal-Mart and the partnership of Southern Universities. Accordingly, there are few, if any, ways in which SJSU can cooperate or learn from its program.

Threats

- None appreciable. SJSU offers a vastly superior program with wider ranges of government and corporate opportunities with a much more economic tuition plan, and is located in a more viable center for the study of transportation.

University of California, Davis–Strengths and Weaknesses (Transportation Planning and Design)**Strengths**

- Has developed a practical lab to explore “research on behavioral implications of ITS technology, a pavements laboratory, a laboratory to conduct experiments of fuel cell and other electric vehicle propulsion systems, a driving simulator laboratory to test safety consequences of in-vehicle devices and a fleet of battery powered vehicles used for field testing.” (Civil Engineering Department Website)
- Location in Davis provides practical access to both suburban and urban centers.
- Receives federal support from the U.S. Department of Transportation.
- Program is nested within the highly ranked Civil Engineering Department.
- Proximity to and established relationship with Caltrans offices.

Weaknesses

- Higher tuition than SJSU.
- While UCD is located near the state capital of Sacramento, it is considerably further from the large urban center of San Francisco, to which many Bay Area universities, including SJSU, have easier access.
- While UCD has implemented a program to develop a highly accessible distance learning program by 2006, this program is still developing for transportation students.
- UCD must compete with Berkeley, CSU Sacramento, San José State University, Stanford, and many other area schools for qualified applicants. The Central Valley/ Bay Area of California is saturated with highly-ranked universities.

Opportunities and Threats for San José State University

Opportunities

- The geographical proximity of the programs allows for, if SJSU elected to pursue such a program, the development of a consortium along the lines of the STC.
- Since both programs are affiliated with Caltrans, there are opportunities for cooperation between departments.
- SJSU and UCD offer a similar program, but SJSU has a substantially lower tuition. However, this is partially balanced by the higher cost of living in the Bay Area.

Threats

- UCD is a higher-tier university than SJSU.
- The practical laboratory is an impressive addition and will draw many applicants. SJSU might consider working with its Engineering department to create a similar program.
- The fact that UCD is geographically nearby, when coupled with the similar emphasis of programs, means that SJSU is likely in competition with UCD for the best students.

University of California, Irvine–Strengths and Weaknesses

Strengths

- Offers a M.S. and Ph.D. in Transportation Engineering, Transportation Policy, and Urban Planning and Development.
- Functions within the Institute of Transportation Studies (ITS), which combines students and faculty from the “School of Engineering, the School of Social Sciences, the School of Social Ecology, the Graduate School of Management, and the Department of Information and Computer Science.” The Institute also hosts visiting scholars from the U.S. and abroad to facilitate cooperative research and information exchange, and sponsors conferences and colloquia to disseminate research results.” (ITS website)
- Proximity to the Los Angeles area and surrounding suburbs provides practical experience for students.

- UCI has a community outreach program with the city of Costa Mesa wherein students work at exactly the sort of projects which they can expect in post-graduate employment.
- Publishes four transportation journals in-house.

Weaknesses

- Few appreciable distance learning programs. While UCI has a developed Distance Learning Center, there are few courses which apply to transportation management.
- High tuition and cost of living.
- No certificate programs currently available.

Opportunities and Threats for San José State University

Opportunities

- Again, were SJSU to pursue the same consortium-style program as the STC, UCI could be a valuable link to Southern California. At any rate, a resource-sharing program could be extremely beneficial as Los Angeles poses several unique transportation dilemmas.
- SJSU could also benefit from association with the resources of the ITS, and perhaps imitate its broad multi-discipline format.
- Again, SJSU can compete with lower tuition cost and relationship with Caltrans.

Threats

- UCI is a higher-tier university than SJSU.
- Those students wishing to study the unique issues of Southern California transportation will naturally prefer this program.
- The ability to offer Ph.D. programs increases viability as a complete program which can provide for the entirety of students' educational needs.
- The relationship with Costa Mesa supplies exactly the kind of practical experience that employers will later value, and this program is unique in its close cooperation with a small community.

University of Connecticut, Storrs–Strengths and Weaknesses

Strengths

- Affiliation with the Connecticut Transportation Institute.
- Offers a thesis-based M.S., Ph.D., and various graduate internship programs.
- Located in the midst of New England, which poses many transportation issues, providing practical experience for students.
- Offers separate master's programs for students wishing to go on to doctoral work.
- Runs the Technology Transfer Center which uses the program participants to benefit the surrounding community and several hands-on laboratories.

Weaknesses

- While one type of distance learning is available, UConn has opted to focus their non-traditional teaching techniques on in-classroom technology and satellite teleconferencing, rather than online education.
- Though UConn is located in the busy center of New England, it is located in a very small town which is quite far from the urban centers of New York, Boston, and Providence.
- There are many other universities in the area which will compete and likely win, if only through their name recognition, the lion's share of qualified applicants. Harvard and MIT are only two.
- Higher tuition than SJSU.

Opportunities and Threats for San José State University

Opportunities

- The variety of tailored master's degrees is a very attractive aspect of this program. It provides a feeling of individuality.
- SJSU has a far more developed distance learning program.
- Tuition is a factor here, as well. SJSU is able to offer a very inexpensive program.

Threats

- Many of these programs have multiple laboratories and outreach programs.
- Additionally, the sheer diversity and creativity of the East Coast universities makes them in some ways more competitive.

University of Denver**Strengths**

- Accelerated 15-month program combines on-site learning with distance programs in a dynamic fashion. The program is designed for students who are already full or part-time employed.
- Proximity to the Denver civic area and practical experience to be gained therein.
- Functions within the Intermodal Transportation Institute (ITI), a support institution similar to the Mineta Transportation Institute.
- Interdisciplinary degree combines engineering and business with urban and regional planning.
- Has a special research program designed to study patterns of human fatigue as they pertain to transportation systems.

Weaknesses

- Extremely high tuition for a publicly-funded university—approximately \$42,000 for the 15-month program.
- Low-residency program may not attract younger students who have not yet made an entry into the private sector.
- High focus on unusual research projects mean that professors are not necessarily focused on the development of their students, who are at any rate only present for five seven-day residencies.

Opportunities and Threats for San José State University**Opportunities**

- Such a deliberate low-residency program is a good option for universities such as SJSU to offer students with the intent of diversifying a program, but should not

replace traditional learning, as it has done at UD. There is no full-residency option for transportation students.

- Nevertheless, the distance learning programs are extremely advanced, of necessity, and bear some scrutiny.

Threats

- While UD does not have a full-residency program, SJSU does not have a fully integrated low-residency program. This fundamental difference means that the two universities will attract different kinds of students and do not compete on the same level.

Georgia State University, Atlanta–Strengths and Weaknesses

Strengths

- Offers an advanced distance and web learning program.
- Transportation specialization is nested in larger Policy Studies Department. It exists as a focus within master's degrees offered in various urban planning and public administration fields. This provides flexibility in post-graduate employment—the applicant is able to demonstrate skills in multiple fields.
- GSU is located in downtown Atlanta, in the midst of the largest urban center in the South. This provides instant practical access to multiple transportation management cases and issues.
- Member of the STC.
- Offers certificate programs and specializations in Aviation Transportation, a field not often covered in traditional transportation programs.

Weaknesses

- GSU offers the equivalent of SJSU's Transportation Management program, but does not provide a separate course of study per se. The class offerings are virtually identical, but the degree in question is urban planning and public administration with a specialization in transportation.
- No federal connective programs.

- Location in such a large city center means there are far fewer opportunities for community programs such as SJSU's liaison with Caltrans or UTK's partnership with the community of Knoxville.
- There appears to be little extra-academic support or corporate assistance for the program, with the exception of the resources of the STC.

Opportunities and Threats for San José State University

Opportunities

- The Certificate in Aviation is an interesting way to diversify a traditional Transportation Management program, one which might be considered by SJSU.
- The WebCT program, GSU's distance learning department, is completely integrated into the rest of the university and widely utilized by all departments. SJSU should strive for this level of cooperation between Internet technology and traditional learning techniques.
- The cooperation between Policy, Urban Planning, and Human Resources Departments serves to further diversify a unique program.

Threats

- SJSU and GSU are both state universities; when competing for the same students, GSU's diverse program may be attractive to some of these applicants.
- Membership in the STC consortium provides a network that allows GSU to shore up its deficiencies in corporate and federal sponsorship with connections to other universities that possess these assets.
- Atlanta is to the South what San Francisco is to the West Coast. SJSU will have a difficult time attracting students from the South when such a competent program exists within this urban center.

Georgia Tech–Strengths and Weaknesses

Strengths

- Georgia Tech's program is actually cross-integrated with GSU's, so the two universities are geographically proximal and extremely cooperative, providing huge resources for students.

- The graduate program at the School of Civil and Environmental Engineering ranks number 5 nationally in the field of Civil Engineering and number 8 in Environmental Engineering. The Georgia Institute of Technology ranks number 4 nationally among graduate engineering schools.
- This program is aligned with the Georgia Transportation Institute, very similar to the alignment between the Mineta Transportation Institute and SJSU degree programs in transportation management.
- A joint-degree program resulting in a Master of City Planning and a Master of Science in Engineering is available. This, in essence, serves the same purpose as a transportation management degree and adds a strong preparation in science.
- As a technical university, Georgia Tech's reputation enhances the expectations for technical expertise in graduates.
- Advanced distance learning center with individual proctors assigned to oversee Internet coursework.

Weaknesses

- Several universities that offer comparable programs are clustered in the Atlanta area, and therefore saturate the market.
- No certificate programs available.
- Considering the creativity of some of the other programs in the STC, Georgia Tech is a rather straightforward program that will likely lose some students to the more progressive departments.

Opportunities and Threats for San José State University

Opportunities

- The proctor system which provides an overseer for each distance student's educational experience lends a gravity and discipline to online learning which should be considered and possibly used to enhance the online experience in SJSU's program.
- The concept of the close, cooperative, circuit of area universities would be a great benefit to Bay Area campuses, especially when utilizing the same urban center for the provision of practical experience.

- Many of these universities, including Georgia Tech, have a great deal of communication between the Engineering Departments, Departments of Civic or Urban Planning, and Transportation Management. Multi-departmental programs provide a great deal of curricular diversity and in turn produce more marketable graduates.

Threats

- This is a campus highly comparable to SJSU, and includes institutional support similar to Mineta. SJSU offers more individual programs, and in this way remains competitive with Georgia Tech.
- This university is nested in the Atlanta area, and provides more immediate access to practicum than the San Jose area.

Iowa State University, Ames—Strengths and Weaknesses

Strengths

- Access to the resources and challenges of a rural planning area is a contrast to urban programs.
- Interdepartmental major drawing from both engineering and business schools.
- Opportunities available to design an independent program for the master's degree.
- Joint degrees are offered with the College of Business and Public Policy and Administration Program.
- Affiliated with the CTRE (Center for Transportation Research and Education), similar to the Mineta Transportation Institute and in partnership with Iowa Department of Transportation.

Weaknesses

- For students uninterested in rural transportation issues and subsequent employment in such an area, ISU offers little incentive to locate in the area.
- Interdepartmental major means that there are few, if any, faculty exclusively devoted to transportation management.

Opportunities and Threats for San José State University

Opportunities

- Multiple joint degrees create a more flexible major and more competitive graduates.

Threats

- As most of the programs thus far considered are on either coast of the U.S., ISU offers the opportunity to study rural transportation management, something SJSU does not provide.

University of Maryland–Strengths and Weaknesses

Strengths

- UM ranks number 17 in *U.S. News and World Report's* national ranking system.
- Extensive online coursework provides access to course materials, virtual classroom discussions, feedback to instructors, as well as online assessment.
- Proximity to the Baltimore and Washington, D.C. urban areas.
- Affiliation with the National Defense Transportation Association.

Weaknesses

- While courses are integrated with and supplemented by online materials, there are no full courses available online.
- Program is a minor part of a larger business school.
- No state-level transportation affiliation.

Opportunities and Threats for San José State University

Opportunities

- SJSU already surpasses UM in distance learning technology.
- SJSU should continue to develop affiliations, such as UM's association with the National Defense Transportation Association.

Threats

- Proximity to and long-standing relationship with the capitol and federal programs.
- Impressive ranking places UM on the top of publicized lists, providing a great deal of exposure.

Northwestern University–Strengths and Weaknesses**Strengths**

- Extremely high name recognition factor.
- Affiliation with Northwestern Transportation Center, which provides a hub for interdisciplinary studies and executive training as well as federally-funded research.
- Proximity to the major urban area of Chicago. O'Hare Airport is the busiest in the world, providing a unique opportunity for those students interested in air transportation planning.
- A board exists within the Northwestern Transportation Center of 75 top transportation executives from the U.S. and abroad that guides the program and to which students can turn for advice.

Weaknesses

- High tuition and difficult admissions policies. The transportation management faculty are within the Civil Engineering Department, and, like all engineering departments, this one requires a level of calculus and physics proficiency that many aspiring students will not possess.
- Distance learning focuses on undergraduate and extension courses rather than substantial graduate work.

Opportunities and Threats for San José State University**Opportunities**

- The panel within Northwestern's advisory center could be adapted for SJSU to include transportation officials from Caltrans, executives from Mineta, IT specialists from the Bay Area, and local policymakers to provide an invaluable and

dynamic group to shape the future of the San Francisco Bay Area and guide the program for students.

- SJSU has an advantage over the big-name universities like Northwestern in that SJSU tuition is much lower, financial aid is easier to obtain, and the program is smaller in size. It is unlikely that SJSU will be able to achieve comparable name recognition; however, recruitment can be focused on the many advantages of the CSU system.

Threats

- As stated, SJSU does not have an equal reputation with schools of this type.
- SJSU does not currently offer doctoral programs in this or related fields and therefore does not have the same level of research opportunities or funding as a school of Northwestern's size.

Polytechnic University, Brooklyn–Strengths and Weaknesses

Strengths

- Centered in the largest urban area in the United States, New York City. This presents innumerable transportation-specific case studies for the practical student.
- Affiliated with TRI (Transportation Research Institute), an institute similar to MTI, and also has partnerships with NYSDOT, the New York Department of Transportation, and many international departments.
- Advanced distance learning center with resources for all aspects of the Civil Engineering Department.
- Mid-level tuition rates.

Weaknesses

- Polytechnic does not have the international reputation of many of the other schools in the area, such as NYU or Columbia.
- High cost of living--the highest in the United States.

- While there are many distance learning options so far as research goes, there are no online courses at this time.

Opportunities and Threats for San José State University

Opportunities

- TRI has excellent international liaisons, partnering with sister organizations in nations such as France. This sort of global networking is always a great advantage to any campus and should be pursued by SJSU.
- A link between New York area schools and California programs might prove beneficial in exploring bi-coastal transportation issues. However, a more prestigious program would prove a better partner for SJSU.

Threats

- Universities located in New York have a unique draw for students interested in large urban centers.
- As a private university, Polytechnic has more access to corporate funding and partnerships.

Purdue University–Strengths and Weaknesses

Strengths

- High name recognition factor.
- Joint program exists between Purdue University and the Indiana Department of Transportation, called the Joint Transportation Research Program (JTRP), which culminates in a large yearly conference known as “Road School.”
- Proximity to the Indianapolis urban area.
- Some distance learning opportunities.

Weaknesses

- High tuition and stringent admission policies. The program is referred to as Transportation and Infrastructure Systems Planning, and is somewhat more complex than traditional transportation management.

- Distance learning is almost exclusively video and correspondence based and does not utilize the Internet to its full potential.
- No distance learning program exists for the Master's in Transportation and Infrastructure Systems.
- The university is physically located in a fairly small town; though urban areas are accessible, it is not comparable to the Bay Area or Chicago region.

Opportunities and Threats for San José State University

Opportunities

- The “Road School” program, a major yearly conference for students, city planners, and experts of all areas of civil engineering and management, is an excellent notion and could be adapted for use in the Bay Area and promoted by SJSU.
- SJSU's distance learning focus provides a much more flexible program.
- SJSU's ability to compete with schools of this size resides in its smaller program, lower tuition, innovation, and location. The larger schools very often cling to traditional learning and neglect the innovations that SJSU encourages.

Threats

- As with Northwestern, SJSU will have difficulty competing with Purdue with regard to the prestige factor.
- The JTRP is very large and impressive and has a long-established tradition which rivals the SJSU program.

Rutgers University–Strengths and Weaknesses (Certificate in Transportation Studies)

Strengths

- High name recognition factor.
- Proximity to New Jersey and New York area urban centers.
- Any graduate student may pursue this certificate.
- Diverse institutional resources (from Rutgers' website): “In 1991, the National Transit Institute (NTI) was started at Rutgers as a congressional mandate under the

Intermodal Surface Transportation Efficiency Act of 1991. In 1998, the Board of Governors established the Alan M. Voorhees Transportation Center, combining NTI with a newly formed Transportation Policy Institute to create a focal point for transportation research and outreach at the university. The School of Engineering, through the Department of Civil Engineering and Environmental Engineering, has created the Center for Advanced Infrastructure and Transportation (CAIT), a U.S. Department of Transportation research center, focusing on technology-based solutions.”

- Cross-disciplinary program encompasses work from Engineering, Public Policy, and Planning Departments.

Weaknesses

- Certificate program only—no M.S. available.
- High tuition.
- Distance learning focused on continuing and adult education programs, not graduate studies.
- For a certificate program, the curriculum is rather broad, encompassing technology and design as well as policy and planning. Therefore, a student might not get enough experience in their chosen specialty within transportation studies.

Opportunities and Threats for San José State University

Opportunities

- With time, SJSU will be able to build the kind of tiered institute system of which Rutgers boasts.

Threats

- SJSU, by offering an M.S. as well as a certificate, has a better program with more resources; however, Rutgers has better name recognition, and thus will draw students easily, whereas SJSU must advertise its program’s superiority in order to win over those same students.

The University of Tennessee, Knoxville—Strengths and Weaknesses

Strengths

- Logistics and Transportation Department ranked number 1 in the nation by a Foster Partners study.
- Has a unique joint M.S./MBA program within an integrated Marketing, Logistics, and Transportation Department.
- Community of Knoxville is integrated into the program through conferences and extensive practicum projects.
- Member of the STC.
- Offers a doctoral program in Marketing, Logistics, and Transportation.

Weaknesses

- Knoxville is a smaller community, and thus does not offer the same opportunities for large-scale practical experience as universities in larger urban areas. This could, however, be turned into a strength, as experience in suburban management is also necessary.
- While there are many off-campus (community liaison) and independent study courses, there are currently few, if any, distance learning opportunities.
- There appears to be much corporate support for the program, however, it is mainly in the field of recruiting, rather than funding or integrated training.
- No federal connective programs.

Opportunities and Threats for San José State University

Opportunities

- SJSU offers a considerably more flexible program than UTK.
- The integrated M.S./MBA program is a good opportunity for these students and draws a great deal of corporate attention. SJSU should also consider facilitating this option for their students.

- SJSU has far superior location value, however, community liaisons with smaller cities might contribute needed transportation management experience that is broader than the traditional urban focus.

Threats

- UTK is a considerably larger campus than SJSU, and thus is able to draw corporate interest.
- The ability to offer a Ph.D. program is a heavy draw for qualified applicants.
- The integration of Marketing and Transportation Departments provides a fresh and attractive approach to transportation education.

Texas A&M—Strengths and Weaknesses

Strengths

- Three semesters of cooperative experience with an outside company is required.
- A concurrent certificate in Business is available with the M.S. in Transportation.
- Housed within one of the largest departments in the university—Civil Engineering—funding and resources are more easily available to students.
- Financial aid is ample and easily available.
- Functions within the Texas Transportation Institute (TTI), which is very similar to the ITS at UC Irvine.
- Located in a small town with low cost of living, but near the urban hub of Houston.

Weaknesses

- Higher tuition than SJSU.
- Though distance learning is available for many subjects, it is not available for transportation studies. Some civil engineering courses offered online may prove applicable to a student, but on the whole the program is not accessible through the current distance learning center.

- University is located in College Station, TX, which is a small town with few opportunities for practical experience. Students will have to travel to Houston for corporate and federal experience, some 100 miles away.
- No certificates in transportation are available, though the concurrent certificate in business is an asset.

Opportunities and Threats for San José State University

Opportunities

- Due to distance and difference in relevant local transportation issues, there is little to be gained in cross-campus programs with Texas A&M.
- The concurrent certificate program in business could be adapted to the needs of SJSU, and would fulfill some of the needs of students and industry for more specific business skills.

Threats

- Higher name recognition factor.
- A&M University is better able to cater to business and engineering students than a traditional university.

University of Wisconsin, Madison—Strengths and Weaknesses (Certificate in Transportation Management and Policy)

Strengths

- Proximity to both rural and urban (Madison and Milwaukee) areas of civic development.
- Focus on environmentally-friendly transportation options within the Nelson Institute, an organization that oversees civic development and environmental sciences.
- Any master's student may take this certificate.
- Mid-level tuition coupled with low cost of living.

Weaknesses

- Certificate program only—there is no M.S. available.

- The program is overwhelmingly focused on environmental aspects of transportation management, which may interest some students, but is narrow enough to exclude many.
- This is a very new program, implemented only within the last two years, and thus has no history to recommend it.

Opportunities and Threats for San José State University

Opportunities

- SJSU can easily incorporate some of the care and emphasis on environmental concerns into its own program without compromising diversity of subject matter.

Threats

- None to speak of. The program does not serve master's students and is geographically distant, serving a different need than SJSU.

PROGRAMS WITH TRANSPORTATION ENGINEERING SPECIALIZATION

University of California, Berkeley–Strengths and Weaknesses (Transportation Engineering)

Strengths

- Name Recognition–Berkeley is a renowned institution with an international reputation for excellence and a highly respected degree program.
- Concurrent degree program is available with the City and Regional Planning Department and Logistics Certificate Program.
- Encourages cross-listed courses in Economics, Logistics, Intelligence Systems, and Environmental Planning.
- Choice between terminal thesis or exam is available.
- Location in the Bay Area provides access to a large urban sector wherein practical experience in transportation management can be obtained.

Weaknesses

- No certificate in transportation management or engineering available.
- Tuition is considerably more expensive than SJSU levels.
- Less than 50 percent of students go on to doctorate level work.
- Admission requirements are considerably more stringent than SJSU—background in physics, calculus, and statistics plus higher scores for TOEFL students.
- Fewer distance learning opportunities.

Opportunities and Threats for San José State University**Opportunities**

- Proximity to SJSU provides opportunities for cross-campus cooperation.
- Proximity to the Bay Area and Caltrans offices provides practical experiences for developing students.
- Berkeley focuses on traditional education techniques, thus, SJSU has the opportunity to offer a more holistically advanced program through distance learning and the utilization of Internet technology.

Threats

- Berkeley will always have an extremely high name recognition factor—far above that of any CSU level university.
- Proximity to SJSU means that the two campuses may be in competition for certain qualified applicants.
- Berkeley has greater access to private funding and therefore is able to provide more services to their students.

University of Florida, Gainesville—Strengths and Weaknesses (Transportation Engineering)**Strengths**

- Part of the STC (Southeast Transportation Center) consortium which links the programs of ten different universities together.

- Unique coastal transportation problems in the Florida Keys create the opportunity to teach from local cases. Practical experience can be gained in these unusual systems.
- Has an advanced distance learning program—FEEDS (The Florida Engineering Education Delivery System) which includes CD-ROM, streaming Internet video, and video cassette technologies.
- Four semester Master's in Transportation Engineering available, also a Certificate in Traffic Operations is offered.
- Terminal theses can be submitted, revised, approved, and published electronically.

Weaknesses

- Program puts emphasis on coastal transportation issues since they are relevant to the university's location. However, this may not be a transferable skill once students enter the workforce in locations that do not face the same challenges as Florida.
- Although its membership in the STC is an asset, such consortiums also spread the resources of a single program between many campuses, making individual programs weaker.
- This program, while linked to several other universities, does not have obvious government or corporate links to the practical market of transportation technology.
- The Transportation Engineering and Traffic Operation degree programs are nested in the much larger Coastal and Civic Engineering Department, and thus less focus is placed on these specializations within the parent field.

Opportunities and Threats for San José State University

Opportunities

- The University of Florida has an excellent distance learning program; however, courses are not always consistently offered through FEEDS. Programs with consistent offerings of online and distance learning courses could position themselves to compete.
- The electronic thesis option, if available at SJSU, should be marketed as an opportunity for students.

Threats

- SJSU has not been as successful when drawing qualified applicants from the East Coast. UFL is much more accessible to these potential students.
- SJSU does not currently have programs which deal in coastal transportation issues to the extent that UFL does.
- The distance learning program at UFL is well-developed and inexpensive, all in all, comparable to and competitive with SJSU. Simultaneously, UFL is in a higher tier of universities, comparable to the UC system, and therefore has a higher prestige factor.

North Carolina State University, Raleigh–Strengths and Weaknesses (Transportation Engineering)**Strengths**

- Located in the Raleigh-Durham Triangle, the most populated and developed part of North Carolina, providing access to the large urban center as well as to traffic patterns exiting the area—no other part of the state has so many opportunities for unique practical experience.
- Consistently ranks among the top 20 engineering programs.
- Affiliated with the Center for Transportation Engineering Studies, which is funded by NCDOT, the equivalent of Caltrans in North Carolina.
- Advanced distance learning program available.
- Member of the STC.

Weaknesses

- While distance learning is available for many programs, it does not encompass Transportation Engineering.
- There appears to be a cluster of schools with similar programs in the South, which will reduce the number of top-notch students at each university.
- Students interested in Urban Planning and Transportation Systems may gravitate towards larger city centers than the Raleigh-Durham area.

Opportunities and Threats for San José State University

Opportunities

- SJSU may consider a link with area universities similar to the STC's model. However, as noted, there are drawbacks to this level of cooperation.

Threats

- Students can obtain a similar level of education and network access at NCSU.
- SJSU's more developed distance learning facilities make it a more viable option for a market trying to integrate IT into the traditional education/civil engineering fields.

University of Washington, Seattle—Strengths and Weaknesses (Transportation Engineering)

Strengths

- Proximity to the urban center of Seattle, the largest city in the Northwest.
- UW is one of the best programs in civil and transportation engineering in the country. In 1975, the Transportation Engineering program received the third largest university level grant in history from the Urban Mass Transportation Administration's Office of University Research.
- Affiliated with TRAC, the Washington State Transportation Center, similar in function to Caltrans.
- In its region, UW has no real competitors. One must go to California and the Bay Area before equivalent programs are found. Therefore, the pool of qualified candidates is likely to gravitate towards this one program, allowing UW to be more selective and host some of the best qualified students.

Weaknesses

- No certificate programs currently available.
- While some lectures and special events are available online, there is currently no coursework at the graduate level which can be accessed online in this field.
- High tuition—UW has recently raised its tuition and now has the highest publicly-funded university tuition on the West Coast.

- Cost of living in Seattle is very high, and UW is located downtown, an excellent area for a transportation student, but with very high rents.

Opportunities and Threats for San José State University

Opportunities

- The UW program may serve as a model for aspiring departments elsewhere—they are able to draw great amounts of corporate funding and public monies. SJSU is in an area that is somewhat similar to Seattle, simply in that there are many technological leaders based in the vicinity. In the next decade or so, SJSU could take advantage of the corporate sponsorship made possible by such proximity and grow into a very prestigious program.
- As with many of these programs, SJSU can offer a cheaper degree and much more advanced distance learning.

Threats

- UW is the premier university of its region and SJSU will have to work hard to compete and draw students south.

STUDENT AND ALUMNI RESPONSE

ANALYSIS OF CURRENT STUDENTS–STUDENT FOCUS GROUPS

A student focus group was conducted in Professor Brown's MTM 217 course on Monday, April 14, 2003. In this particular focus group we interviewed four students in the CTM program and nine students in the MSTM program (the focus group questionnaire used for current students can be found in Appendix A).

A self-administered qualitative questionnaire was sent to Professor Ron Sylvia's MTM 296B Labor Relations in Transportation Management course on May 8, 2003. Professor Sylvia distributed the questionnaire via e-mail to all registered students in that course.

General Analysis of Student Focus Group Results

Overall, students are enthusiastically in support of the program and see it as instrumental in advancing their careers. They have a few specific complaints as detailed below, however these complaints are mild compared to their overall satisfaction. In brief, from the student's perspective, the program would be greatly strengthened by the expanded use of outside speakers and an expansion in course offerings that would include geographic or spatial planning, public participation, implementation, and global issues. Students would also like the program expanded to include students from other states and countries.

There was general agreement that courses are very valuable and relevant to career goals. The videoconferencing in particular is very popular among students, and despite some pointed comments that the professors need technological assistance and support, the students enjoy the ease, accessibility, and flexibility afforded by the videoconferencing format. In fact, they would like to see more locations for videoconferencing.

Online instruction seems popular as one component of a course, however the vast majority of students were against any 100 percent online format for any course. It is clear that students would like to see an expanded online library with increased availability of online research resources.

Faculty members are perceived as extremely knowledgeable, accessible, and available for advising if the need should arise. Overall, faculty members take students' backgrounds into

consideration when they teach courses, and the variety of students in the program is a significant “plus.”

Detailed Report of Focus Groups

The focus group began with queries about course offerings in the CTM and the MSTM programs.

Course Offerings

When asked whether there were an appropriate range of courses offered in the program, students generally responded that yes, there were an appropriate range to choose from. In response to the self-administered qualitative questionnaire; one student stated that “the courses appear to be specific and focused.”

When asked which courses had been most valuable, students indicated that Professor Peter Haas’ course, MTM 201: Fundamentals of Transportation Management, had been extremely valuable, one student stated that the course “made me want to stay in the program.”

Students also agreed that MTM 215: Transportation Systems Planning and Development, is a valuable course, with one student offering that the “open discussions provided valuable perspectives from students.”

Improvement

When students responded that there were not enough courses offered in the programs, they cited a variety of reasons including:

- Students felt that there should be a wider range of electives beyond the core courses, in particular they would like to see courses in geographic or spatial planning, courses emphasizing public participation, courses in implementation of transportation policies, and more courses on the global aspects of transportation.
- Students agreed that the marketing course should be geared more toward transportation and the public sector—the current emphasis was not on transportation issues.
- Several students felt that the capstone course should be offered more often.

Relevance of Course Content

When asked whether the content of the available courses was relevant in their present jobs, the consensus of students was that yes, the courses are relevant to their present jobs. Their reasons included the following:

- “The courses give me an understanding of how my work ties in with the strategic scheme.”
- “The MTM program coincides with the organization that I am working for... a public transportation organization.”
- “The courses gave me an understanding of how funds are allocated and how projects were put together.”
- “Courses have helped me to understand in a broad sense how my work ties into the big picture.”
- “The mission statement of Caltrans is now understandable.”
- “The MTM 215 course offered by Nick Compin helped me to learn a lot about things I wasn’t aware of. It presented a broad overview and explained the relevance of transportation, with theory and application combined.”

Improvement

When asked how courses might be improved, students stated that:

- They wanted to learn more about other segments of transportation rather than just government agencies.
- They wanted more on international issues including ocean transportation, air traffic issues, and trucking.
- They also expressed the feeling that the planning course required more emphasis on implementation.
- Students agreed that project management needed to be combined with development, construction, and implementation—and that these components were critical.

- In the area of marketing, students would like to see more emphasis on marketing in transportation—especially with specific focus on the public sector.
- Several students mentioned that they would like to see more speakers from the field and exposure to lots of different perspectives.
- Interestingly, students also mentioned that they would like to see more international students and more students from other states—indicating that the program would benefit from outreach to a nationwide and international pool of potential students.

Relevance of Course Content to Career Goals

When asked whether the content of available courses was valuable in terms of structuring their career goals, students answered that:

- “Yes, unquestionably, the information in the courses helped me when I was changing jobs.”
- “The course information is applicable to any transportation industry, from labor relations to policy, the information crosses industries. Every course is relevant, even beyond transportation.”
- “It helps to be aware of different issues facing managers.”
- “Yes, the courses are valuable because there is a tendency to promote people with broad, well-rounded understanding of the entire process and how transportation principles are applicable.”
- “Yes, it has been valuable in structuring my career goal ... hope the program will offer a Ph.D. eventually.”

One person stated that the available courses were not valuable so far in terms of structuring their career goals. When asked “Why not?” the student replied that “although the course titles look good, the content did not match the titles.”

Videoconferenced Classes

When asked whether and in which ways videoconferenced classes had been valuable, students were very enthusiastically in support of this format. A few quotes include:

- “Having people from all over the state is a big plus. We get to see variety of different points of views from different market orientations.”
- “I came in as a skeptic, but the divergent points of view made it incredibly valuable.”
- “The proximity to my office and easy accessibility were very valuable to me.”

Improvement

When asked how the videoconferencing might be improved students felt that there should be:

- “More locations to increase availability.”
- “More television monitors so that they can all see each other.”
- “More onsite technological support for faculty since there had been a variety of technological problems especially with connectivity.” (Although one student said that the technological problems were “not too bad.”)
- “A variety of speakers with different points of view.”

In response to the self-administered qualitative questionnaire, one student stated that:

- “When technology is available to improve the existing system, they should upgrade the system.”

Online (Internet-based) Instruction

Students were asked what their reaction was to the online (or Internet-based) component of the transportation management program, students answered that the use of online instruction varies, is sometimes a valuable addition to the course, but is prone to problems. Some quotes include:

- “It depends on the instructor.”
- “Haas used it the best, he integrated it well into the class each week and that was a good use of online instruction.”

- “The times it worked the best was when there were very precise and focused discussions online, the instructor must moderate the discussion well and have specific topics.”
- “I don’t like the test-taking software, it is prone to problems and for any kind of computer problem you must go back and verify with the professor, and also there isn’t a spell-checker.”
- “Deadlines need to be in real-time. I missed the exam because of confusion with Pacific Time.”
- “I like it as long as the system is fully functional on the other end. Occasionally, I encountered problems due to main server failure.”

Student Opinion Regarding 100 Percent Online Instruction

Although most students felt that all courses should have some online component, when asked whether any individual courses should be 100 percent online (or Internet-based), the consensus of students was “no.”

Reasons included the following:

- “No. Online is too boring”
- “No, we need to keep it interactive, we like seeing people, we need communication and interaction.”
- “Keep it as is.”
- “No, totally against online classes.”
- “Part of the M.S. program is to improve communication skills, which will be lost if the class is 100 percent online.”
- “We would miss the speakers.”
- “We would lose the whole idea of networking.”

A dissenting vote occurred in response to the self-administered qualitative questionnaire—here one student stated that the courses that require research should be online.

Faculty Knowledge

When asked whether, in their experience, faculty had generally been knowledgeable in their respective fields, students responded with positive comments including:

- “Absolutely.”
- “Real happy with the quality so far.”

However, two students stated that “Instructors should be people who work in the field, and thus bring experience of successes and failures into the program.”

Faculty Accessibility

When asked how accessible their professors had been, students responded that they had been “fairly good” and “okay.” Several students singled out Dr. Haas, who they stated had been available and able to discuss career goals.

One student stated that “professors are very accessible and return phone calls or e-mails promptly.”

Faculty Advising

When asked about whether faculty had provided advice that had helped to focus career goals, students generally felt that faculty were open to the possibility of helping to focus career goals but most students had not asked for this type of advice.

Faculty Consideration of Student Backgrounds and Differences

When students were asked whether faculty take student backgrounds and differences into consideration as they teach a course, one student replied:

“Yes, this is a very diverse student population and professors take that into consideration when they teach the courses. That’s one of the great things about the program, there are lots of different opinions and backgrounds.”

One student stated that “the SJSU program seems to be geared toward Caltrans.”

Another student stated that “they are aware of our situations and take that into account.”

Availability of Research Materials and Resources

Students generally felt that a comprehensive online library of transportation-related articles and other resources would greatly enhance and facilitate their research.

Strengths of Program

When asked about the value of the program for career professionals, students responded that:

- “For those professionals who are involved in the public transportation sector, this program is very important in advancing their career and will help them in keeping up with the new technology in this field.”
- “The program is awesome.”
- “The interactive component is great.”
- “The program is very diverse, with different backgrounds and different points of view.”
- “The videoconferencing allows us to learn from each other from different locations and in different jobs, with a variety of perspectives.”
- “We really enjoy the guest speakers.”
- “It’s really helped me in my career.”

Areas in Which the Program Might be Improved

When students were asked how the Transportation Management Program might improve its degree programs, they answered:

- “Reading materials and syllabus should be available at least one week before class begins since students all have jobs.”
- “Especially the access information to start WebCT should be given to students early, there is no reason to be late consistently.”
- “Add a Ph.D. program for those who want it.”

Again, several students felt that course offerings should be expanded and that there should be more instructors and/or guest speakers.

One student stated that “the program seems very biased toward San Jose (and California). The topics should be expanded to statewide issues and international topics.”

CURRENT STUDENTS: ONLINE SURVEY

All current students received a request during the week of July 21, 2003 to complete an online survey (see Appendix B for Online Survey Instrument). The online survey contains closed-ended and open-ended questions. Answers to closed-ended questions appear in univariate statistical charts. Answers to qualitative items are summarized along with summaries of the entire questionnaire in the general analysis below.

General Analysis of Online Survey Results

Respondents

Nineteen current students completed the online survey. Eighteen of the 19 students that responded were enrolled in the Master of Science program in Transportation Management. Ninety-five percent of respondents were in at least their second year of instruction. Forty-seven percent of respondents were female, and 53 percent of respondents were male. One hundred percent of respondents were full-time employees in a transportation-related position.

Courses

Eighty-four percent of respondents felt that there was an appropriate range of courses offered in the program, however half of those that thought there was an appropriate range of courses would like to see more variety. Fully 95 percent felt that the content of the available courses was relevant to their career goals. Seventy-nine percent agreed or strongly agreed that course requirements were clear and reasonable. One hundred percent of students were at least “satisfied” with the video-conferenced courses. Of these, only approximately one-third stated that they were “somewhat satisfied,” while two-thirds were either “satisfied” or “very satisfied.”

Open-ended Question–Course Offerings

Several students mentioned that elective courses had been cancelled and that was a loss for the program.

Online Courses

Only 10 percent of those responding felt that all courses should be available online; while 37 percent felt that some courses should be available online (16 percent of current students had no opinion about the availability of completely online courses), another 37 percent felt that no courses should be completely online.

There is obviously a strong difference of opinion on this issue. When students were queried about having a “portion of every course” online, 47 percent thought that would be appropriate, 29 percent thought only certain courses should have a portion of course content online, and 24 percent thought that no course should have a portion of course content online.

Open-Ended Question–Online Courses

In the open-ended question about online courses, one student thought that the 100 percent online format would not work well since students don’t learn as much in that format, while several students felt that having a portion of every course online would be positive as it provides opportunities for interaction between students and enhances learning. Students also felt that reading materials ought to be placed online more often. One student stated that, “It’s a good way to disseminate information. It cuts down on paperwork for the instructor. It’s more convenient for the students. It’s a good way to administer exams and assignments.”

Valuable Courses

When asked which courses have been the most valuable, five students mentioned MTM 215, five students mentioned MTM 217, four students mentioned MTM 203, four students mentioned MTM 214, two students mentioned MTM 201, two students mentioned MTM 202, two students mentioned MTM 296a, two students mentioned MTM 296b, one student mentioned MTM 286, and one student mentioned “the legal course.”

When asked which courses they would like to see offered that are not currently offered, four students stated that they would like to see a course on transportation planning and land use;

three students requested a course on leadership and management; three students stated that they would like to see a course on how transit agencies operate; two students asked for a course on acquisition, goods movement, and logistics; two students stated that they would like to see a course on the history of transit; two students would like to see a course on careers in transportation industry; one student requested an internship course; and one student suggested a course related to the capstone requirement.

Open-Ended Question–Course Value

One student stated that courses had “broadened their perspective and background in Civil Engineering and project management.” Another stated that the focus on policy issues “sets MTI apart from its peers.” Still another stated that, “Courses are very connected to the entire transportation element in government and business.” One student suggested that a panel be considered to teach a course on project management and interagency coordination with partners. In testament to the breadth of the program one student stated that, “These courses have been most valuable due to the quality of the class instructor and materials presented, in addition to direct applicability to my current position as a transportation engineer in a Caltrans design office.”

Instruction

When asked about the quality of instruction, 84 percent of students agreed that it was excellent, 10.5 percent of students were neutral, and only 5 percent of students disagreed. Fully 100 percent of students agreed that faculty are generally knowledgeable in their respective fields. Only five percent of students disagreed with the statement that faculty are “fair and unbiased” and only five percent of students disagreed with the statement that “faculty take student differences into consideration as they teach a course.” Fully 74 percent of students agreed that faculty are accessible with 26 percent responding that they were “neutral.” No respondents disagreed with the statement that faculty are accessible. No students disagreed with the statement “Faculty provide valuable feedback and advice,” and ninety percent of respondents felt that faculty were concerned about the success of their students.

Open-Ended Question-Instruction

Students mentioned that there should be better quality control for video-conferenced courses and technological assistance for professors. One student suggested that “each site have a

document camera.” However, students also felt that this was “the future of the classroom.” Students also mentioned in open-ended comments that international video-conferenced courses would be a valuable addition to the program because they would encourage discussion of issues that are international in scope, such as global warming. Having online chat sessions was popular among students.

Services

One-fifth of students felt that services were not adequate to help them with decisions about their career. However, almost two-fifths felt that these services were adequate; the remainder were neutral. Sixty-three percent felt that research resources were adequate.

Value of Program

The vast majority, fully 95 percent of respondents felt that the program was valuable for career professionals, five percent were neutral, and no respondent disagreed. Three-fourths of respondents felt that the program has a good reputation within the community of transportation professionals, the remainder were neutral and no respondents disagreed.

Open-Ended Question–Value of Program

One student expanded their answer regarding the value of the program by stating that:

At Caltrans, you are generally not exposed to departments outside of your work environment. For example, construction engineers are not familiar with the project engineer’s daily work tasks, and vice-versa. The program was able to expose individuals to many areas and departments within one organization.

Financial Aid

Eighty-three percent of respondents either did not need financial aid or found financial aid resources offered by the program to be adequate. Seventeen percent stated that while resources were available, they were not adequate. No respondents stated that financial aid resources were not available.

Experience in the Program

Ninety-five percent of respondents stated that the program had met or exceeded their expectations. One hundred percent of respondents rated the program at least “Fair,” while 68 percent rated the program “Very Good” or “Excellent.” One hundred percent of respondents stated that if they had it to do over again, they would enroll in this program.

Factors Influencing Enrollment

When asked which factors most influenced their enrollment. Video-conferenced courses and cost were by far the most compelling reasons for enrolling in the SJSU program. Eighty-four percent mentioned video-conferenced classes and 84 percent mentioned cost as factors influencing enrollment. Other factors included 37 percent who mentioned academic reputation, 37 percent who mentioned recommendations from colleagues, and 37 percent who mentioned geographic location. For all respondents, the SJSU program was either their first or second choice and, for fully 79 percent, the SJSU program represented their first choice.

Additional Comments

When asked for any additional comments, students stated that:

- “The key to the continued success of the program will be to pay attention to the students’ feedback.”
- “If possible, an added component such as an exchange program with other countries, and/or the option to earn an MBA could increase enrollment.”
- “I learned much more than I ever imagined! Thanks.”
- “I’ve completed the certificate program but stopped after the courses I wanted to take in my electives were dropped from the master’s program. Also I’m not enthusiastic about some of the other core courses I would need to take. I still have the ability to return but will not do so unless the course offerings change. I have enjoyed my participation in the program other than that.”

A student that would like to see courses focus on problem-solving stated that:

“It seems to me that with the exception of a few token projects, 99 percent of transportation budgets and programs are continuing to perpetuate antiquated technology (projects) that do little more than delay or camouflage solutions.”

Other quotes include:

- “My experience has been really great so far. The staff, director, and professors are all extremely supportive and really show that they care about their students and the program.”
- “The MSTM program needs more promotion for attracting additional students.”
- “I like the teachers who had speakers from the transportation field. I thought they were the most interesting.”

UNIVARIATE STATISTICS

Table 1: Program enrollment of respondents

1: Please tell us which Mineta Transportation Graduate Program you are enrolled in.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	MS	18	94.7	94.7	94.7
	Certificate	1	5.3	5.3	100.0
	Total	19	100.0	100.0	

Table 2: Appropriate range of courses in program

2: Is there an appropriate range of courses offered in your program?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	15.8	15.8	15.8
	Yes, but would like to see more variety	8	42.1	42.1	57.9
	Yes, an appropriate range	8	42.1	42.1	100.0
	Total	19	100.0	100.0	

Question 2: Is there an appropriate range of courses offered in your program?

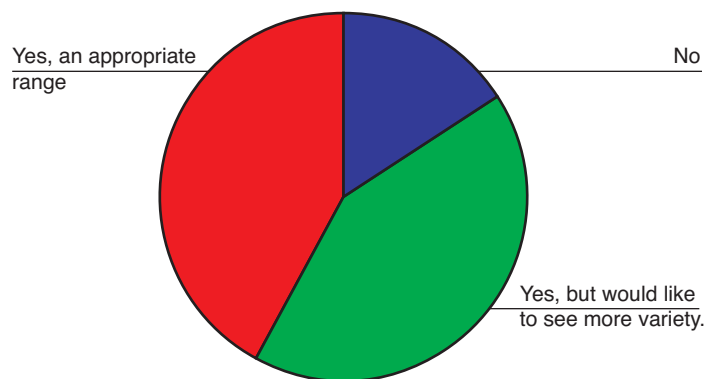


Figure 1: Range of courses in program

Table 3: Available content relevant to career goals

5: The content of the available courses is relevant to my career goals.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	5.3	5.3	5.3
	Agree	11	57.9	57.9	63.2
	Strongly Agree	7	36.8	36.8	100.0
	Total	19	100.0	100.0	

Question 5: The content of the available courses is relevant to my career goals.

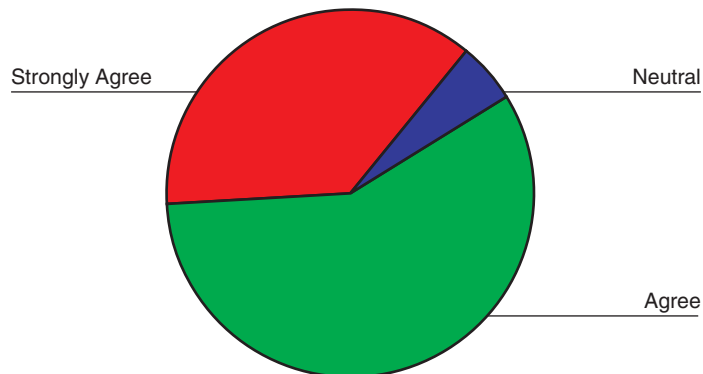


Figure 2: Available content relevant to career goals

Table 4: Course requirements reasonable

7: Course Requirements are generally clear and reasonable.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	5.3	5.3	5.3
	Neutral	3	15.8	15.8	21.1
	Agree	12	63.2	63.2	84.2
	Strongly Agree	3	15.8	15.8	100.0
	Total	19	100.0	100.0	

Question 7: Course Requirements are generally clear and reasonable.

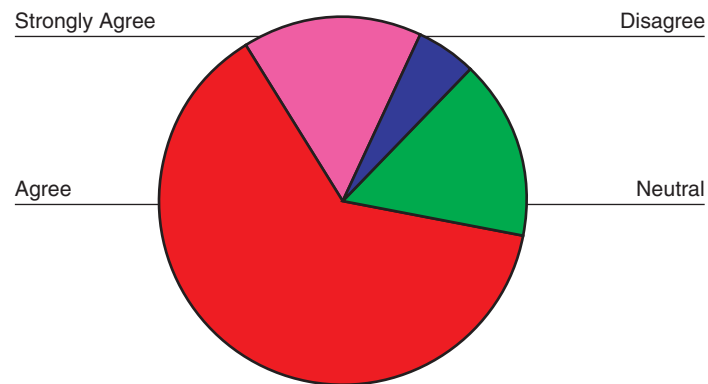


Figure 3: Course requirements reasonable

Table 5: Satisfaction with videoconferenced classes?

8: How satisfied are you with videoconferenced classes?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	6	31.6	31.6	31.6
	Satisfied	8	42.1	42.1	73.7
	Very Satisfied	5	26.3	26.3	100.0
	Total	19	100.0	100.0	

Question 8: How satisfied are you with videoconferenced classes?

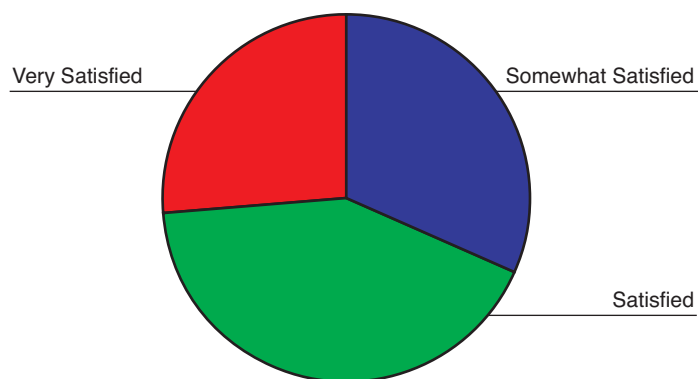


Figure 4: Satisfaction with videoconferenced courses

Table 6: Opinion regarding online classes

10: Which statement most closely matches your opinion?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Opinion	3	15.8	15.8	15.8
	I would not like to see online courses in the TM program	7	36.8	36.8	52.6
	Program should have some courses online but not 100%	7	36.8	36.8	89.5
	Program should have 100% of courses available online	2	10.5	10.5	100.0
	Total	19	100.0	100.0	

Question 10: Which statement closely matches your opinion?

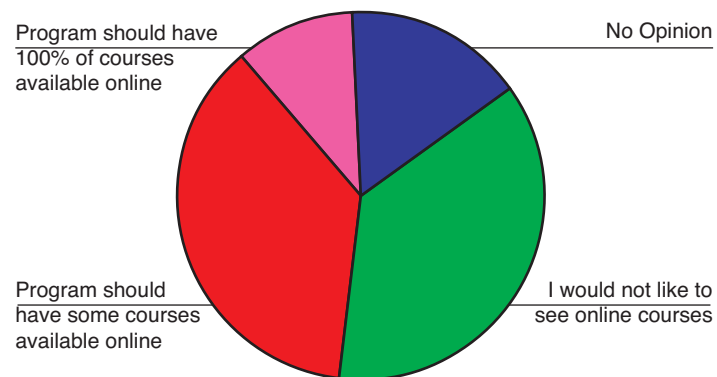


Figure 5: Opinion regarding online classes

Table 7: Portion of each class online

12: What is your view of having at least a portion of each course available online?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No courses should have instruction online	4	21.1	23.5	23.5
	Certain courses should have portion of instruction online	5	26.3	29.4	52.9
	All courses should have portion of instruction online	8	42.1	47.1	100.0
	Total	17	89.5	100.0	
Missing	System	2	10.5		
Total		19	100.0		

Question 12: What is your view of having at least a portion of each course available online?

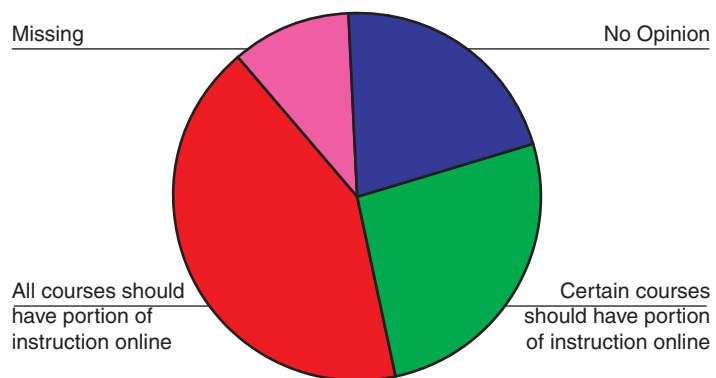


Figure 6: Portion of each class online

Table 8: Quality of instruction

14: The quality of instruction I receive in most classes is excellent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	5.3	5.3	5.3
	Neutral	2	10.5	10.5	15.8
	Agree	10	52.6	52.6	68.4
	Strongly Agree	6	31.6	31.6	100.0
	Total	19	100.0	100.0	

Question 14: The quality of instruction I receive in most classes is excellent.

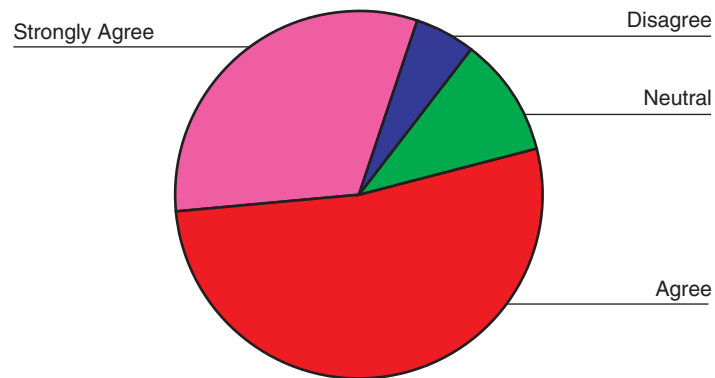


Figure 7: Quality of instruction

Table 9: Knowledgeable faculty

15: Faculty are generally knowledgeable in their respective fields.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	9	47.4	47.4	47.4
	Strongly Agree	10	52.6	52.6	100.0
	Total	19	100.0	100.0	

Question 15: Faculty members are generally knowledgeable in their respective fields.

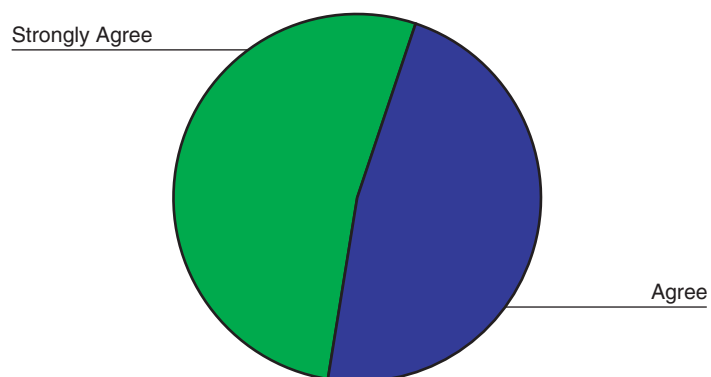


Figure 8: Knowledgeable faculty

Table 10: Faculty fair and unbiased

16: Faculty are fair and unbiased in their treatment of individual students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	5.3	5.3	5.3
	Neutral	6	31.6	31.6	36.8
	Agree	7	36.8	36.8	73.7
	Strongly Agree	5	26.3	26.3	100.0
	Total	19	100.0	100.0	

Question 16: Faculty are fair and unbiased in their treatment of individual students.

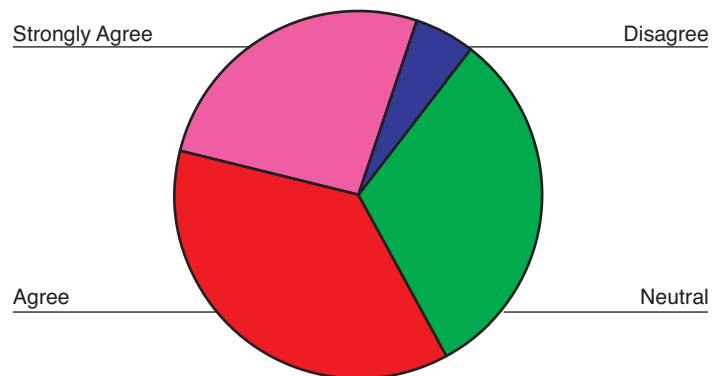


Figure 9: Faculty fair and unbiased

Table 11: Faculty consider student differences

17: Faculty take student differences into consideration as they teach a course.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	5.3	5.3	5.3
	Neutral	7	36.8	36.8	42.1
	Agree	6	31.6	31.6	73.7
	Strongly Agree	5	26.3	26.3	100.0
	Total	19	100.0	100.0	

Question 17: Faculty take student differences into consideration as they teach the course.

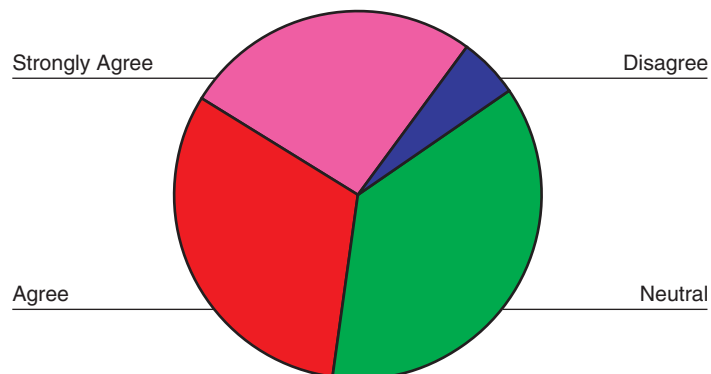


Figure 10: Faculty consider student differences

Table 12: Faculty are accessible and available

18: Faculty are accessible and available by phone and/or email.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	26.3	26.3	26.3
	Agree	9	47.4	47.4	73.7
	Strongly Agree	5	26.3	26.3	100.0
	Total	19	100.0	100.0	

Question 18: Faculty members are accessible and available by phone and/or e-mail.

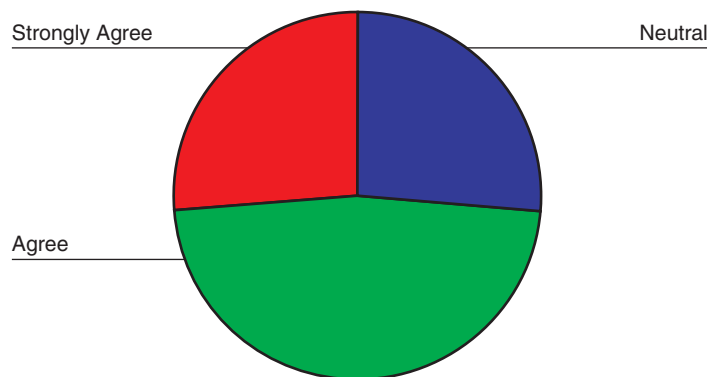


Figure 11: Faculty are accessible and available

Table 13: Faculty provide feedback

19: Faculty provide valuable feedback and advice.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	26.3	27.8	27.8
	Agree	10	52.6	55.6	83.3
	Strongly Agree	3	15.8	16.7	100.0
	Total	18	94.7	100.0	
Missing	System	1	5.3		
Total		19	100.0		

Question 19: Faculty provide valuable feedback and advice.

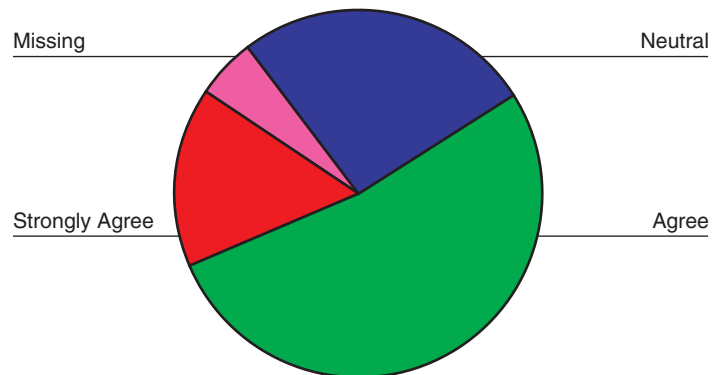


Figure 12: Faculty provide feedback

Table 14: Faculty concerned about student success

20: Faculty are concerned about the success of their students.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	10.5	10.5	10.5
	Agree	9	47.4	47.4	57.9
	Strongly Agree	8	42.1	42.1	100.0
	Total	19	100.0	100.0	

Question 20: Faculty are concerned about the success of their students.

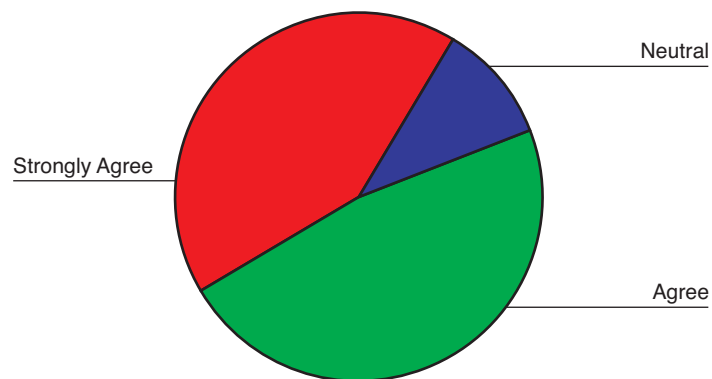


Figure 13: Faculty concerned about student success

Table 15: Adequate services

21: There are adequate services to help me with decisions about my career.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	21.1	21.1	21.1
	Neutral	8	42.1	42.1	63.2
	Agree	6	31.6	31.6	94.7
	Strongly Agree	1	5.3	5.3	100.0
	Total	19	100.0	100.0	

Question 21: There are adequate services to help me with decisions about my career.

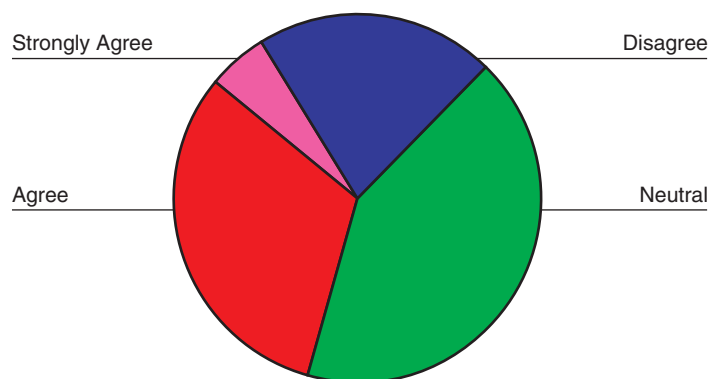


Figure 14: Adequate services

Table 16: Adequate research resources

22: Adequate research resources and materials are available.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	10.5	10.5	10.5
	Neutral	5	26.3	26.3	36.8
	Agree	9	47.4	47.4	84.2
	Strongly Agree	3	15.8	15.8	100.0
	Total	19	100.0	100.0	

Question 22: Adequate research resources and materials are available.

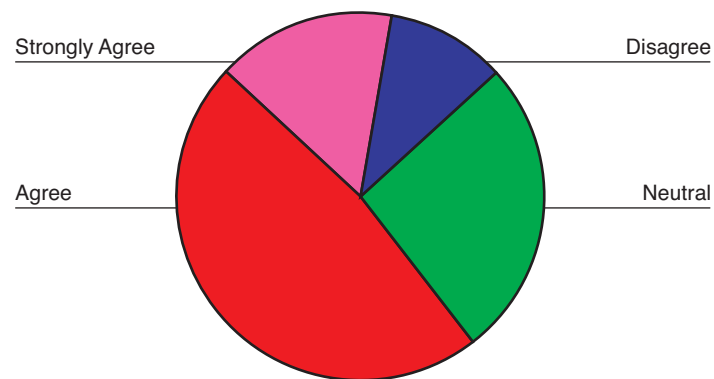


Figure 15: Adequate research resources

Table 17: Program valuable for career professionals

23: The program is valuable for career professionals.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	5.3	5.3	5.3
	Agree	8	42.1	42.1	47.4
	Strongly Agree	10	52.6	52.6	100.0
	Total	19	100.0	100.0	

Question 23: The program is valuable for career professionals.

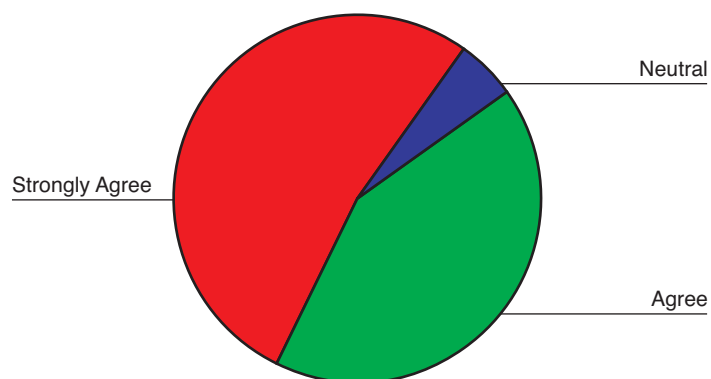


Figure 16: Program valuable for career professionals

Table 18: Program reputation among transportation community

24: This program has a good reputation within the community of transportation professionals.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	26.3	26.3	26.3
	Agree	9	47.4	47.4	73.7
	Strongly Agree	5	26.3	26.3	100.0
	Total	19	100.0	100.0	

Question 24: The program has a good reputation within the community of transportation professionals.

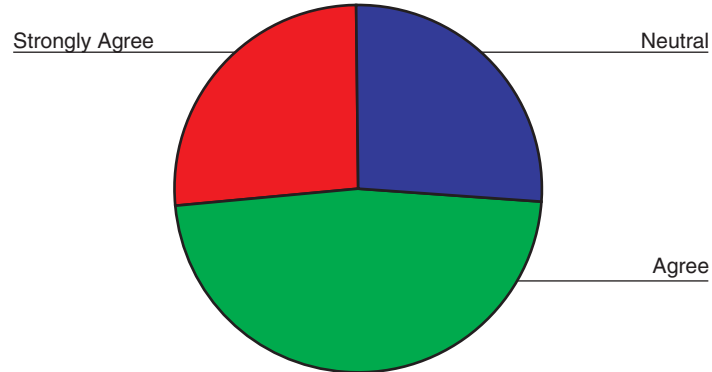


Figure 17: Program reputation among transportation community

Table 19: Financial aid resources

25: If you required financial aid, were adequate resources available for you?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Did not require financial aid	6	31.6	33.3	33.3
	Resources were available but not adequate.	3	15.8	16.7	50.0
	Yes, resources were available and adequate.	9	47.4	50.0	100.0
	Total	18	94.7	100.0	
Missing	System	1	5.3		
Total		19	100.0		

Question 25: If you required financial aid, were adequate resources available for you?

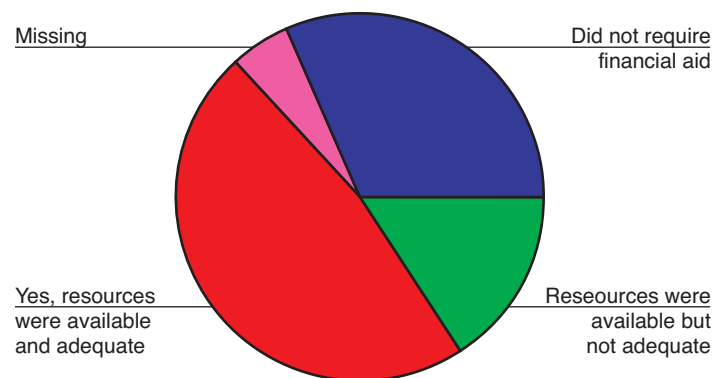


Figure 18: Financial aid resources

Table 20: MTI program met expectations

26: So far, how has your experience with the Mineta Transportation Management Program met with your expectations?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Worse than I expected	1	5.3	5.3	5.3
	About what I expected	2	10.5	10.5	15.8
	Better than I expected	8	42.1	42.1	57.9
	Quite a bit better than I expected	4	21.1	21.1	78.9
	Much better than I expected	4	21.1	21.1	100.0
	Total	19	100.0	100.0	

Question 26: So far, how has your experience with the Mineta Transportation Management Program met with your expectations?

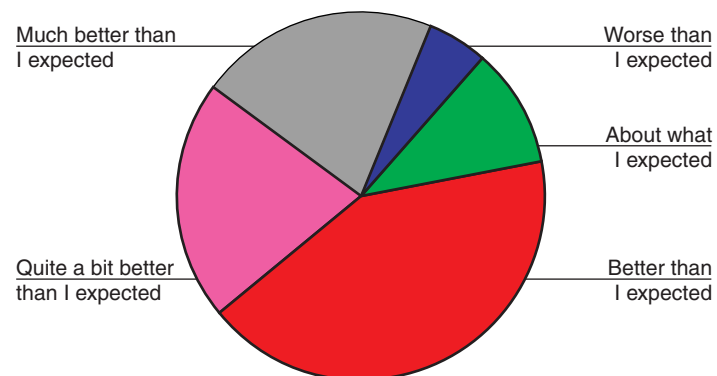


Figure 19: MTI program met expectations

Table 21: Overall impression of Transportation Management Program

27: What is your overall impression of the Mineta Transportation Management Graduate Program?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	1	5.3	5.3	5.3
	Good	5	26.3	26.3	31.6
	Very Good	6	31.6	31.6	63.2
	Excellent	7	36.8	36.8	100.0
	Total	19	100.0	100.0	

Question 27: What is your overall impression of the Mineta Transportation Management Graduate Program?

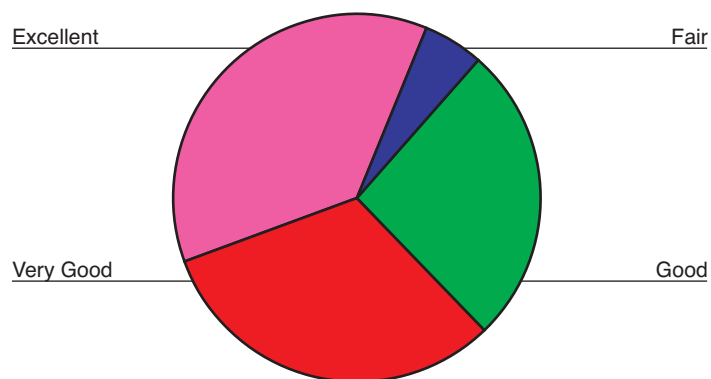


Figure 20: Overall impression of Transportation Management Program

Table 22: Factors in enrolling/videoconferenced classes

28a: Which factors were important in your decision to enroll - videoconferenced classes?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Present	3	15.8	15.8	15.8
	Present	16	84.2	84.2	100.0
	Total	19	100.0	100.0	

Question 28a: Which factors were important in your decision to enroll—videoconferenced classes?

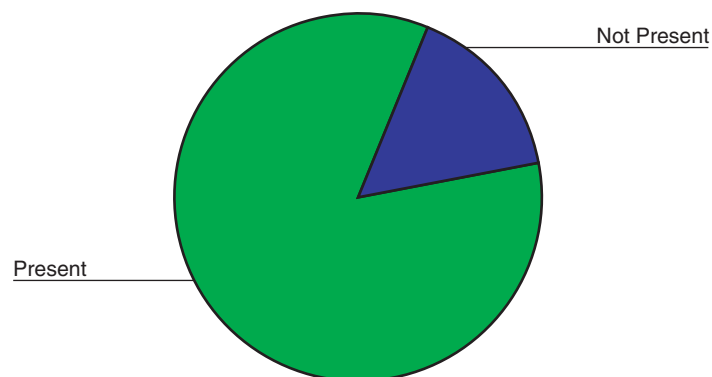


Figure 21: Factors in enrolling/videoconferenced classes

Table 23: Factors in enrolling/cost

28b: Which factors were important in your decision to enroll - cost?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Present	3	15.8	15.8	15.8
	Present	16	84.2	84.2	100.0
	Total	19	100.0	100.0	

Question 28b: Which factors were important in your decision to enroll—cost?

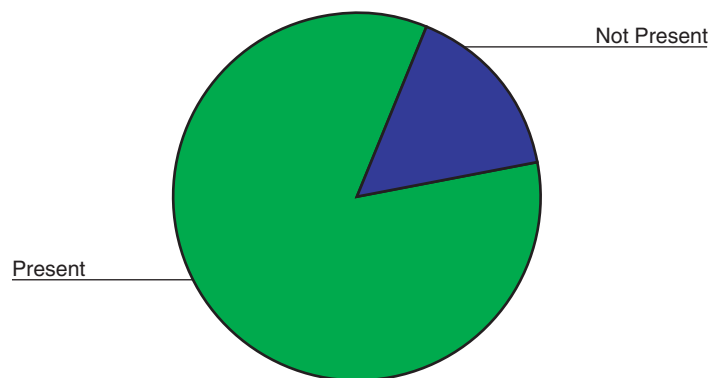


Figure 22: Factors in enrolling/cost

Table 24: Factors in enrolling/academic reputation

28c: Which factors were important in your decision to enroll - academic reputation?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Present	12	63.2	63.2	63.2
	Present	7	36.8	36.8	100.0
	Total	19	100.0	100.0	

Question 28c: Which factors were important in your decision to enroll—academic reputation?

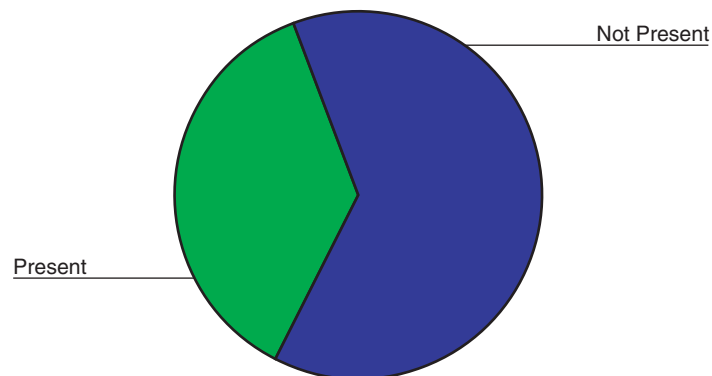


Figure 23: Factors in enrolling/academic reputation

Table 25: Factors in enrolling/recommendations from colleagues

28d: Which factors were important in your decision to enroll - recommendations from friends/colleagues?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Present	12	63.2	63.2	63.2
	Present	7	36.8	36.8	100.0
	Total	19	100.0	100.0	

Question 28d: Which factors were important in your decision to enroll—recommendations from friends/colleagues?

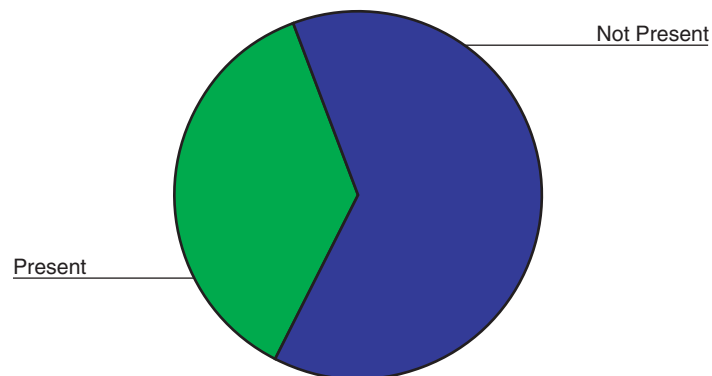


Figure 24: Factors in enrolling/recommendations from colleagues

Table 26: Factors in enrolling/geographic location

28e: Which factors were important in your decision to enroll - geographic location?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Present	12	63.2	63.2	63.2
	Present	7	36.8	36.8	100.0
	Total	19	100.0	100.0	

Question 28e: Which factors were important in your decision to enroll—geographic location?

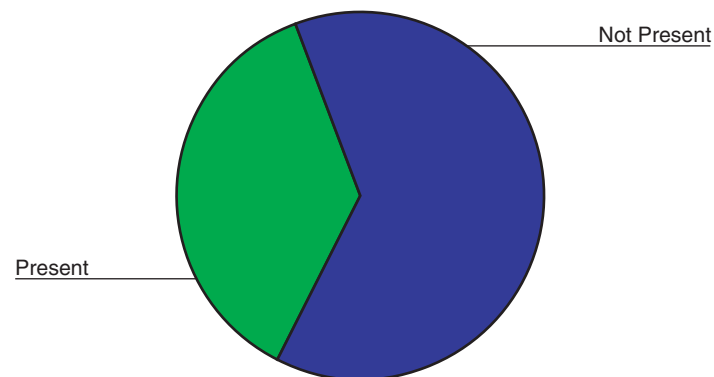


Figure 25: Factors in enrolling/geographic location

Table 27: Program was first, second, or third choice

29: The program was my 1st, 2nd, 3rd choice.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2nd Choice	3	15.8	16.7	16.7
	1st choice	15	78.9	83.3	100.0
	Total	18	94.7	100.0	
Missing	System	1	5.3		
Total		19	100.0		

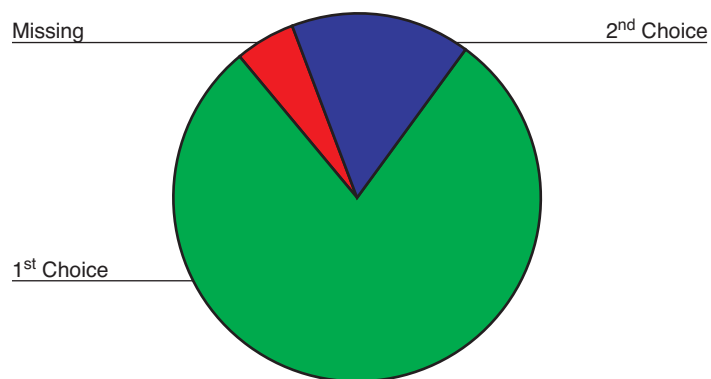
Question 29: The program was my 1st, 2nd, 3rd choice.

Figure 26: Program was first, second, or third choice

Table 28: Would you enroll here?

30: All in all, if you had it to do over again, would you enroll here?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Probably Yes	5	26.3	26.3	26.3
	Definitely Yes	14	73.7	73.7	100.0
	Total	19	100.0	100.0	

Question 30: All in all, if you had it to do over again, would you enroll here?

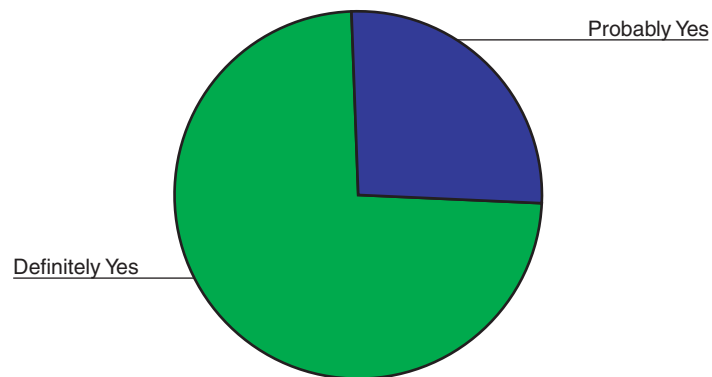


Figure 27: Would you enroll here?

Table 29: Current enrollment status

31: What is your current enrollment status?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1st Year	1	5.3	5.6	5.6
	2nd Year	11	57.9	61.1	66.7
	3rd Year	2	10.5	11.1	77.8
	More than 3rd Year	4	21.1	22.2	100.0
	Total	18	94.7	100.0	
Missing	System	1	5.3		
Total		19	100.0		

Question 31: What is your current enrollment status?

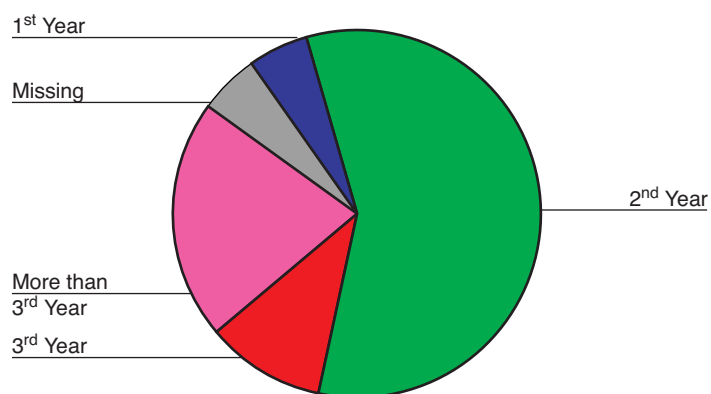


Figure 28: Current enrollment status

Table 30: Current employment status

32: What is your employment status?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full-time transportation related	19	100.0	100.0	100.0

Table 31: Current GPA

33: What is your current GPA?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3.00	1	5.3	5.6	5.6
	3.20	2	10.5	11.1	16.7
	3.40	1	5.3	5.6	22.2
	3.50	2	10.5	11.1	33.3
	3.60	3	15.8	16.7	50.0
	3.65	1	5.3	5.6	55.6
	3.70	3	15.8	16.7	72.2
	3.80	1	5.3	5.6	77.8
	3.86	1	5.3	5.6	83.3
	3.91	1	5.3	5.6	88.9
	4.00	2	10.5	11.1	100.0
	Total	18	94.7	100.0	
Missing	System	1	5.3		
Total		19	100.0		

Table 32: Gender

34: What is your gender?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	9	47.4	47.4	47.4
	Male	10	52.6	52.6	100.0
	Total	19	100.0	100.0	

Question 34: What is your gender?

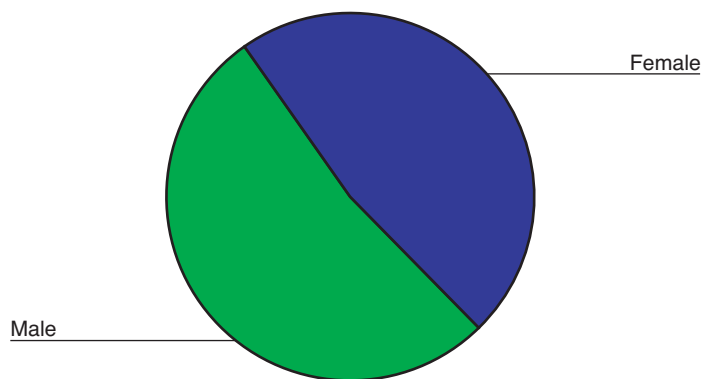


Figure 29: Gender

Table 33: Age

35: What is your age?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26-29	3	15.8	15.8	15.8
	30-33	3	15.8	15.8	31.6
	34-37	1	5.3	5.3	36.8
	38-41	6	31.6	31.6	68.4
	42-45	1	5.3	5.3	73.7
	46-49	2	10.5	10.5	84.2
	50 and over	3	15.8	15.8	100.0
	Total	19	100.0	100.0	

Question 35: What is your age?

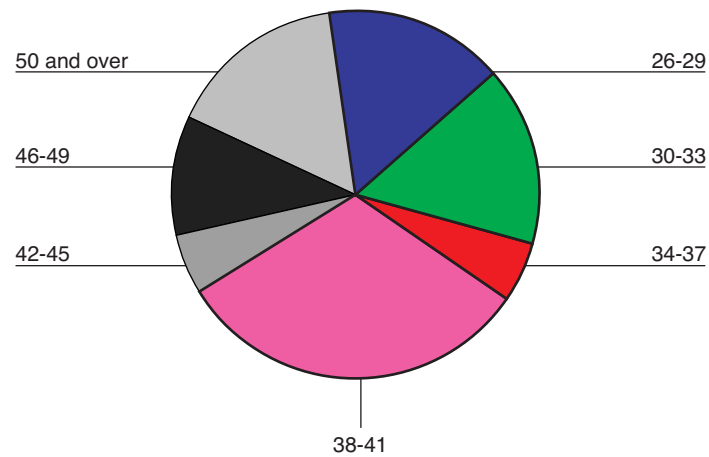


Figure 30: Age

Table 34: Ethnicity

36: What is your ethnicity/race?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African-American	3	15.8	15.8	15.8
	American Indian or Alaskan Native	1	5.3	5.3	21.1
	Asian or Pacific Islander	5	26.3	26.3	47.4
	Caucasian/White	7	36.8	36.8	84.2
	Prefer not to respond	3	15.8	15.8	100.0
	Total	19	100.0	100.0	

Question 36: What is your ethnicity/race?

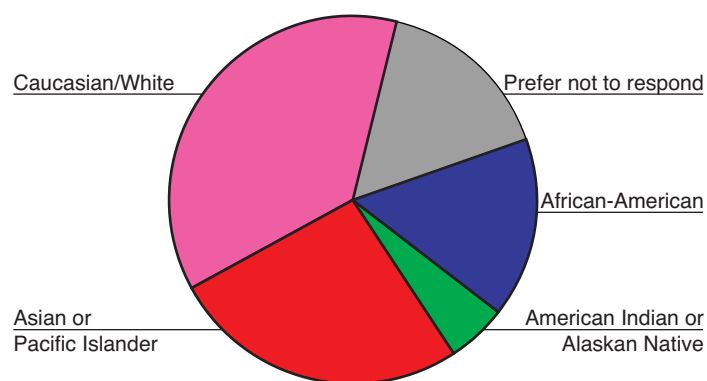


Figure 31: Ethnicity

ALUMNI FOCUS GROUP ANALYSIS

The alumni focus group included graduates from both the Masters of Science in Transportation Management (MSTM) and the Certificate in Transportation Management (CTM). The alumni focus group took place on March 21, 2003. The focus group questionnaire for alumni can be found in Appendix C.

General Analysis of Alumni Focus Group Results

Overall, alumni were satisfied with the program. They did however have some pointed suggestions for improvement.

- **Coursework.** The twin issues that seemed to focus alumni were the necessity of an ethics course and a need for additional training in applied quantitative analysis. They explained that these issues become extremely relevant on the job in the transportation industry and alumni feel the need for additional training in these areas. In addition to this important training, alumni felt that more on applied finance, personnel, intergovernmental negotiations, and law would be extremely useful.
- **Approach.** In regard to the general approach of the program, alumni suggest that a case-study approach would facilitate their application of theoretical knowledge and substantive facts, when issues arise in their careers.
- **Capstone.** The capstone course in the graduate program received some criticism. Alumni mentioned that requirements should be clarified, and that there should be more direction and follow-up—including advice regarding publication.
- **Videoconferencing.** Alumni were very positive about the availability of videoconferenced courses—particularly because it created a situation within which they were exposed to a variety of perspectives from those students participating from different locations throughout California; however, it was clear that the alumni perceive that the technology is not being used to its full potential. Alumni recommended a technical assistant for every professor.
- **Online Instruction.** Online instruction received mixed reviews. Alumni are positive about the use of online instruction as one component of the course; however, they did not want to see any course 100 percent online. They did

recommend the use of online workgroup sites, electronic feedback on writing, and an electronic library.

- **Faculty.** Alumni were very enthusiastic about the quality of instruction, and state that professors were all “personable, factual, and extremely knowledgeable.” Professors were also singled out for accessibility and willingness to give valuable feedback and advising.
- **Networking.** Alumni would like to see more focus on networking during and after the graduate programs, including mentorship and internship opportunities.
- **Advertising.** Finally, alumni were in agreement that the program should be promoted more than it currently is and these promotional materials should emphasize the excellence of the program.

Detailed Report of Alumni Focus Group

What follows is a detailed report of all comments at the alumni focus group conducted on March 21, 2003. The focus group began with queries about course offerings in the CTM and the MSTM programs.

Course Offerings/Range of Courses

Alumni responded that they would like to see more course offerings—there were a limited number of courses available to take, necessitating that they take MBA elective classes. In addition they would like to see more variety in the courses that are offered.

Most Valuable Courses

When asked which courses or types of courses were most valuable, alumni responded that the planning courses, the capstone course, the course on leadership and management, and Bill Taylor’s transportation policy course were most valuable. Bill Taylor’s course in particular was singled out as being “marvelous.”

One student volunteered that there is an extensive amount of writing required in the capstone course and students should be advised to prepare for that and to get started early. Professors should specifically tell students that there will be a lot of leg work in completing this capstone course, and that they should get started early.

Courses Needed

When asked which courses they would like to see offered they agreed that an ethics course would be very important. Additionally, one student stated that “there should be more time on accounting, especially more on funding issues and sources as well as revenue shortfalls.” Students agreed that a course devoted solely to law and transportation issues would be an important addition. Finally, alumni mentioned that there should be more emphasis on case studies overall. A case study emphasis would:

- Enhance understanding of the gravity of problems, e.g. what happened in the San Francisco Bay Area
- Allow professors to spend more time on operations issues, construction, and funding sources.
- Augment explanations of intergovernmental issues and negotiations.

In addition, students felt that an entire semester should be devoted to finance as the current course covers three subjects within one-and-a-half months.

They also agreed that they needed more training in statistical analysis as the current course is too short.

Finally, they felt that there should be several specialty classes for students to choose from—say four classes on technical aspects and students would choose two in their particular areas of interest.

Availability of Courses

Alumni stated that yes, listed courses were available—no problems here. Alumni appreciated the work of MTT’s program assistant who “hounded them.”

Relevance of Available Courses to Present Position

Students stated that the goal of the transportation program is to deal in the broader scope of things, this is in fact what the courses do, and they hoped to use this knowledge in the future.

Alumni mentioned that the courses which had been particularly relevant on the job were data analysis, budgeting, and personnel issues.

Alumni felt that courses could be improved by spending more time on operations issues.

They also singled out surveys—both survey construction and data analysis as a very valuable skill that they felt professors could spend more time on. More time on data analysis would also “help us on the job.”

One student also mentioned that “the majority of courses offered are in engineering and planning” and that there should be more on policy issues and specific skill acquisition.

Value of Courses in Gaining Promotion

Alumni felt that although opportunities for advancement are often rare, having the advanced degree helps considerably. They also mentioned that communications skills and writing are very often the key, graduates should be able to write well and present complex ideas clearly.

Again, the issue of the ethics course came up. One student stated that “Most students have an engineering background; therefore, a course in ethics would help.” Also more emphasis on leadership would be useful.

One student stated that “The leadership training was great when we received it, it puts it all into perspective. Project management is also extremely helpful.”

Students agreed that leadership and project management skills would open doors to get more work. They were grateful that these skills were part of the training that they did get in the MTI program. However, all present would like to see more in this area.

Alumni also mentioned that students need to learn to be flexible but they weren’t sure how this could be taught.

Finally, they recommended that from their on-the-job experience, students should be taught applied data analysis: how best to use and discern data, how to communicate those data, and how to direct staff in light of those data.

Students present singled out the Leadership and Management class, taught by Professor Barbara Brown, stating that “it makes you think about your plans and goals; helps you to map out your future (in 5 years); forces you to really think realistically and rationally.”

Satisfaction with Videoconferenced Courses

Value of Videoconferenced Courses

Alumni at the focus group were local and stated that the videoconferencing did not really affect them because they were local and came to the classroom all the time. However they did have a few comments about the technology. On the positive side one student stated that, “I felt like the other students were in the classroom and heard lots of different perspectives; it was seamless WHEN IT WORKED and we were able to see other students, but it’s really frustrating when it crashes.”

Another student stated, “We could have made better use of the technology, the professor should have a technical assistant.”

When asked how these courses might be improved, students stated that:

- “We see a lot of advanced technologies in the private sector. Maybe there are budgetary constraints that prevent us from using them at MTI.”
- “They should use more of the available technology, like workgroup sites, electronic feedback on writing, and an electronic library would be great.”
- “It’s great to get people from satellite areas, who can offer different perspectives—e.g. people from Southern California...”

Online Instruction and Resources

Opinion of Online Instruction

Alumni had some experience with online instruction and felt that having homework and midterm examinations online were very helpful. Alumni felt that all courses should have some online component, stating that they were seeing the transition to online information in their own offices.

With reference to having any course offered 100 percent online, they agreed that the demand is there, but were not positive about a 100 percent online course. Quotes included “Personally, it’s not my preference” and “Certain students still need face-to-face interaction.”

Faculty

Quality of Instruction

Students felt that the quality of instruction was excellent and singled out some as “terrific instructors,” including: William Taylor, Barbara Brown, and Bill Derrick. When asked why these instructors were superlative, alumni responded that they were all “personable, factual, had lots of information for them, and were extremely knowledgeable in their fields.”

Clarity of Course Requirements

Alumni agreed that for the most part, the course requirements were clear and reasonable. However, one student stated that, “There could be improvement in the statistics course with more information, more direction, and more time spent on this topic.

In addition, the alumni singled out the capstone course as being problematic. “The requirements were not clear; there should be more direction and follow-up; e.g., whether or not our paper(s) will be published. My final paper was peer-reviewed. It went to two reviewers in Washington, D.C., and I got valuable feedback, but I didn’t know whether to revise it. I wasn’t sure if it was catalogued. This experience should be more meaningful, not just a check-mark. I’m not even sure if all students have their work peer-reviewed.”

Accessibility

Alumni agreed that professors were always accessible, even e-mailing immediate responses to questions.

Faculty Feedback in Courses

Alumni agreed that for the most part, faculty gave valuable feedback, except perhaps in the capstone course. One student noted that “many of my papers got valuable feedback and criticism, which was very helpful.”

Faculty Advice about Career Goals

Alumni felt that this sort of advice was limited. However, within certain courses, for example, the leadership class, students mentioned that they were given the opportunity to “explore and assess career goals.”

Faculty Consideration of Student Backgrounds and Differences

Alumni agreed that the faculty had been very understanding and responsive to student diversity, “We got to hear about real life experiences, which were fascinating! These case studies were very important to hear, especially from the planners, but also operations and engineering.”

Meeting Student Needs

Here, Professor Brown was singled out as a particularly marvelous instructor. Alumni stated that this instructor had made students think about their future, leadership issues, and to become more objective.

Several alumni did mention that they had requested, but did not receive, their old papers. This student stated that “I put a lot of efforts [into them] but got no feedback in return. But this was just one specific, isolated class.”

Ways In Which Faculty Can Be Improved

Alumni agreed that giving real life examples (such as Professor Bill Taylor does very enthusiastically) was extremely important. They would like to have heard more specifics on marketing and on transportation agency issues. They felt that the marketing class was too similar to an MBA course and wanted to see specific transportation examples in courses like this one.

Resources and Research Materials

Availability

Alumni mentioned that “the MTC in Oakland has a (physical) library, which has lots of information for the foundation. Can MTI do the same?” Overall, doing research was a bit

confusing because students did not know where to go to obtain materials. Alumni felt that having a physical library and an electronic library through MTI would be great.

Career Decisions

Services to Help with Career Decisions

Alumni generally stated that they did not seek out help with career decisions but felt that they would have liked to have been paired up “with a mentor.” Alumni also mentioned that they would have liked assistance with “networking” and thought that perhaps a MTI dinner might be a good time for that. MTI could actually help by setting up a forum at that dinner that would facilitate networking. Perhaps seating graduates at tables with possible mentors, or having a mentor sign-up sheet, or announcing available positions and the person to contact. Some graduates that have received awards for their research could make a short presentation at the banquet.

Financial Aid

Alumni felt that the program was very affordable and the presence of scholarships was very helpful.

Concern for Graduating Students

Alumni felt that at graduation, they had “just left.” They each agreed that “There’s no feedback.” All alumni present thought that some follow-up after graduation including networking and mentorship opportunities might be helpful.

Alumni agreed that the tuition for the program was “Definitely a worthwhile investment!” In particular they felt that the program was valuable for career professionals because it provided a broad overview of the industry and of course, the additional credential.

However, they agreed that opportunities for internships would be very valuable. One person stated that “Because most of us are managers, an internship must be something at the executive level to make it worthwhile.”

Alumni agreed that the program met and exceeded their expectations and that if they had it to do over again they definitely would enroll here.

Alumni again mentioned the potential positive outcomes that networking opportunities would provide. They also felt that the program could assist with more career advice, possible job placement, and finally some help with parking issues would be greatly appreciated!

Marketing

Alumni felt that SJSU should advertise the quality program that they have. One student stated that:

They should increase the visibility of the program by advertising the program more. Look at UC Berkeley, Santa Clara, San Francisco University, etc.—they’re all heavily advertised. I don’t know if it’s a budget constraint issue or what, but we should open it up and get the word out through the business section of newspapers and over radio.

ALUMNI INTERVIEW ANALYSIS

In addition to the focus group conducted with alumni, available alumni were contacted and asked to participate in an in-depth interview; those that agreed are included in this analysis. Individual interviews elicited more lengthy and detailed responses. The instrument used for these telephone interviews is provided in Appendix D.

General Analysis of Alumni Interviews

- **Courses.** In interviews, alumni were very positive about the courses that they completed. One respondent mentioned that an “international study tour” and its focus on foreign transportation management would be very valuable, as would more information on lobbying and strategic negotiation. Courses in leadership and management, legislative authorization processes, and the politics of funding were specifically mentioned as beneficial.
- **Videoconferencing.** Very popular among alumni, videoconferencing was described as the “jewel of the program.” Alumni look forward to the expansion of the technology so that international students can participate from their homes. One person described a “synergy” that was “created by learning professionals from diverse geographic locations.” One student recommended training for students and professors in the full use of the various devices available.
- **Online Instruction.** As in previous responses from students and alumni, these interviews indicated that alumni support online instruction as one component of a

class—in particular to provide readings, documents, research resources, and a message board—however, overall they did not support the idea of a 100 percent online format for any course.

- **Faculty.** Faculty were repeatedly commended for their knowledge, “real-world” perspective, professionalism, responsiveness, and overall excellence.
- **Program.** Alumni felt that the program was excellent, provided valuable experience and education, was cost-effective, and extremely valuable. They recommend the program for its focus, methodology, and breadth. Two students did mention that they would hope that the tuition would eventually be fully supported by Caltrans for employees that take advantage of these graduate programs.

Detailed Report of Alumni Interviews

All alumni were called for interviews. Four alumni agreed to in-depth interviews (they are identified as responses A, B, C, & D)—their responses follow:

Alumni Questionnaire

1. Based on your experience, was there an appropriate range of courses offered in the program? If no, why not? If yes, how were they relevant and/or how might they be improved?

a. All of the courses were right on the money with responsive, experienced and thoughtful professors. I apply the principles I learned routinely and have great success using them.

b. Yes, but more flexibility with other departments would have been helpful, I think.

My original plans for graduate school included a degree in urban planning, and a joint-degree program between the business college and planning school at SJSU would have been most helpful, if at all possible.

One of the early brochures mentioned an international study tour as one course. Such a trip would facilitate an understanding and appreciation of foreign transportation management that we could bring back to our employment here.

Also, an elective in politics and lobbying (i.e., dealing with elected officials) would be most helpful in learning strategic negotiation.

c. Yes. All the ones were relevant except the accounting course. While the instructor was very knowledgeable, the topics covered were not geared toward government accounting. We do not need to know about stocks, for example. There should be a needs assessment done as to what government managers really need to know re: accounting/budgeting and the course objectives and curriculum tailored to meet that. There was little on the state budget, how government is funded, etc. I felt I was taking typical Accounting 1A.

d. Was very pleased with the courses—as a new employee at Caltrans, they were very informative.

2. Did the available courses, and content of those courses prove valuable in gaining employment, in your present job, or in securing promotions, depending on your particular situation? If no, why not? If yes, how were they valuable and/or how might they be improved?

a. Yes, but it took a long time because my transit agency has an inconsistent and excessively subjective method of selecting promotees. Education achievement is often considered last or not at all for transportation management positions. I graduated in May of 2000 and was only able to successfully achieve assistant manager in July of 2000, and only because the other remaining candidates on the list were simply too poorly qualified to promote. I probably would have had a better chance if I were able to change city and agency.

b. Yes, the CTM opened me up to more interesting assignments in my present job. It also strengthened my application to pursue full-time graduate studies at USC in planning and public administration starting last year.

c. Not yet. There are not many positions available now with the cutbacks.

d. Have not proved to be helpful yet, however I *have* moved from administration to right-of-way; but don't think my certificate really helped. My personal opinion of District 5's view of the program is that they don't care, as they don't promote it or even inform people about it.

3. Was the content of available courses valuable in structuring your career goals? If no, why not? If yes, how?

a. Absolutely useful, I had the good fortune of becoming an Eno fellow in my year of the program. That experience coupled with the dynamic study of the re-authorization of TEA-21 gave me a whole new perspective that now affects my leadership decisions and has greatly changed the areas of emphasis both for myself and my staff. More specifically, understanding the political system that funds and drives transportation policy made it apparent what actions had to be taken at the operations level to make the agency attractive and responsive to the goals of the politicians and staff members that determine our funding and policy. Courses in the program provided guidance in how to achieve those changes.

b. Yes, the content helped me decide how to succeed in my future management career, especially Leadership and Management of Transportation Organizations (MTM 217), which helped develop professional and personal goals.

c. It gave me a fresh perspective on the overall transportation management area. Not having been in formal schooling for a number of years, it served as an update of the overall picture.

d. My original career goal was to be promoted to a staff manager position, however I don't think the classes influence the executive management in D5, so I have not continued to enroll.

4. How satisfied were you with videoconference classes? How were they valuable and could they be improved?

a. This is the jewel of the program, without it there would be no way to gather enough professionals to make the classes practical. In addition, the synergy created by learning professionals from diverse geographical locations brought together experiences, needs, and ideas that may never have shared the same forum. Having rural paratransit managers in the same virtual room with big city subway supervisors created discussions that broadened my understanding of competing goals within transportation policy systems. The only improvement would be the ability to do it from home, which may come someday as technology continues to develop. This would broaden the field to the rest of the U.S. and potentially the world, imagine a guest speaker from a new rail

project in China talking with every type of surface transit professional in America, almost makes me wish I could do the program again!

b. The videoconference classes were so easy to attend and provided a medium to virtually “meet” and work with classmates who were too far away otherwise.

c. They worked pretty well. A few glitches, as to be expected.

d. Very satisfied with video classes...convenient and great interaction with instructors.

5. If your program included online instruction, what is your overall view of the online component?

a. Having exams online seemed to work fairly well, security was clumsy but it worked well for my class. Using the Internet to provide documents and research resources is another plus, though I would not like to see Internet components substitute for or eliminate lectures and dialogue on the video teleconferencing system, that is really the best part of the course.

b. The Message Board system was an invaluable tool to keep a dialog going during the week between classes so that “live” time in class was more productive. Unfortunately, Dr. Haas was the only professor to make good use of this technology (for MTM 201).

c. As a professional trainer, I feel online definitely has its niche, but it is not good for topics where a lot of discussion is needed. I think the accounting course could definitely be online. The other courses I took—the intro with Prof. Haas, the legal course with Mr. Taylor, and the environmental course with Mr. Trumbull—would have lost something online. The questions they were able to field and the group conversations we had would not have been as effective.

d. Several classes contained online interaction and I think it was also great. Good use of resources.

6. Do you think all courses should have an online component?

a. Most of ours did and it seemed to work well. Courses that are strictly research without exams may not need much online other than e-mail for review of developing documents by advisors during research.

b. Definitely. Professors could upload a lot more of the reading and research materials online rather than trying to mail us photocopies all the time. Having more online content might allow students to get a head start on coursework prior to the first class.

c. No. But for those that would work—and there could be some on-line portion for just about any course—it should be looked at. This would allow the students to work on their classes (the study portion) when it's convenient (weekends, etc.) and at their own pace. Then the teleconferences (and expense) could be saved for the discussions, etc. where the instructors are really valuable.

I have taken an Introduction to Project Management course on-line at CSUS and we had the chat discussions and message boards. I do not feel they are as effective as the teleconference or in-person discussions.

d. I think they are helpful.

7. Do you think that any courses should be 100 percent online? Why?

a. Absolutely not, at the Masters level, interaction amongst student professionals, professors, and guest speakers is the critical component that makes the learning exercise valuable and useful. I feel 100 percent online courses are more appropriate for undergraduate work for the first two years and only for standardized courses that offer little opportunity for group development.

b. No, because the opportunities for direct interaction and student collaboration should not be diminished.

c. Accounting. The best discussion we had was on the Enron scandal, and that was very interesting but had nothing to do with government accounting. You definitely do need a knowledgeable instructor to answer questions. This can be done on-line as the questions would be more procedural and not part of a dynamic discussion.

d. No—think they should still contain video as I personally am a “show me” individual.

8. How would you rate the quality of instruction that you received in most of your classes?

a. I cannot find any fault with any of the courses, materials, professors, or speakers. I have valuable memories and skills that I use from all of them throughout my professional career.

b. Excellent! Two examples: MTM 203-Transportation Marketing—Dr. Vitale brought a “real world” perspective from his careers outside of government and education. The ability to “sell” good public works projects to constituents is often a lost ability among civil servants. In regard to MTM 214-Legal Aspects of Transportation: Again, Bill Taylor was very interested in bringing his practical experience as a lawyer to the classroom. He made otherwise dry material relevant and worth our time to learn.

c. All of the instructors were very knowledgeable. They were all excellent in terms of what they know. Prof. Haas is obviously very knowledgeable; Mr. Trumbull is amazing in his ability to add facts to any environmental topic, Mr. Taylor is very good at relating the law to transportation, and the accounting instructor is very knowledgeable in accounting.

d. Excellent in all but the accounting class... he would digress too often and didn't cover everything that was on the exam.

9. Were your professors accessible and knowledgeable?

a. They were unusually so, many acted as mentors and advisors even when it was not part of their lesson plan. All had thoughtful and insightful responses to any question posed to them, regardless of complexity or specificity. The few questions they couldn't respond to were researched and addressed either by the next class or through e-mail.

b. They were almost always available and responsive via telephone or e-mail, although it took awhile to figure out which worked better and when for each one. Even those with large undergrad classes also spent time responding to us.

c. Yes and Yes.

d. All were professional and accessible.

10. Were your course requirements usually clear and reasonable? If no, example?

a. Surprisingly, I was irritated with some of the course requirements that did not appear immediately important to my career. But three years later, I can safely say that even the courses that did not interest me have been instrumental in successful execution of my duties as assistant manager.

b. Not always. The intensive format of a semester-long class over 10 weeks was exhausting, especially when some classes overlap. Some time should be allowed between the last class meeting/exam and the final assignment (term project) due dates because it's too rushed at the end for the instructors to get their grades in on time. A way to alleviate this pressure is pacing the courses more evenly throughout the year, thereby reducing the summer break.

An extreme example was when one of the fall classes postponed the final exam until mid-January because computer support staff were on vacation and could not set-up the website for exam administration.

c. Yes. With very little exception we discussed what we were told to read. I don't feel the amount of work was excessive and we were given enough to adequately cover the topic.

d. Yes—always got a prospectus...

11. Did you receive useful career as well as academic advice from faculty? Were other appropriate resources and research materials available and adequate?

a. Without question, even though I disagreed fundamentally with my thesis advisor, the basis for my assertions and his differing responses were well documented and fairly compared. I learned that there is no right or wrong when it comes to transportation management and leadership. There are competing goals and ideas that are well researched and supported that must then be selected according to available funding,

time, and above all, successful presentation and execution. A project that is properly organized and executed often beats a theoretically superior project. That's the key behind successful transportation management.

b. Yes. Most were generous in writing recommendations, too. Bill Taylor went out of his way to meet with all of us in-person, despite his busy schedule. He also assigned work that helped us improve research skills.

This videoconference format lends itself well to making presentations, but I don't feel that the technology available was used to the fullest because neither the students nor faculty were ever trained in using the various devices available.

c. I never sought this out.

d. No academic advice from faculty—and didn't know I could ask!

12. Overall, did faculty meet your needs as students? How could faculty improve?

a. All needs were met and exceeded; improvement would only come from continued teaching or courses. It seems all involved learn more each time the class dynamic is engaged.

b. Yes, overall. Faculty could improve by allowing more flexibility with deadlines, although this might be an overall program policy issue (as I noted in number 10). Second, the instruction frequently leaned toward lecturing rather than active participation. Students did not always have a chance to present their term research assignments to the class, which would be better than a final exam.

c. Yes. I thought they were all good.

d. As stated above, all great except accounting was a little challenging.

Just a couple of final points...

13. Did the program demonstrate concern for the diversity of its students, and their career opportunities?

a. More than most. Differing careers, transportation activities, geographical locations, ages, ethnic backgrounds, and genders all came together in the teleconferencing environment very successfully.

b. Starting to see more new students from outside of Caltrans helped to bring in some new ideas from their perspectives, although much more student recruitment from outside agencies would be nice.

c. We had a lot of diverse students in the classes I attended.

d. Don't know if it did.

14. Do you feel the tuition and time commitment for the program was a worthwhile investment, and in your experience would you say the program has a good reputation within the community of transportation professionals?

a. A master's degree of this quality and valuable experience in 10 courses? I challenge you to find a more efficient way to gain this kind of experience and education! The flexibility, concentration, and cost effectiveness of this program are hard to improve on!

b. Certainly. I just wish Caltrans supported this activity as much as some of these other training programs by making MTM coursework eligible for "job-related" (100 percent tuition reimbursement and study time) instead of "career related" (50 percent tuition & books up to \$1000 per year).

The annual banquet is an invaluable networking opportunity. Hearing Jeff Morales among other transportation leaders every year helped me realize the value of this program.

c. Yes and Yes.

d. Feel the time was worth it, cost was very high and D5 only helped with \$250. Feel the program has a good reputation with the industry; but not with D5. Maybe someone needs to contact Gregg Albright (District Director—and I know he took at least one class) and promote the program...

15. Overall, did your experience with the Transportation Management Program meet with your expectations? Would you recommend this program to others in your field? If not, why?

a. I would certainly recommend this as the most successful and useful post-graduate program for transportation professionals. Its focus, methodology, and the breadth of well-reviewed topics are an excellent component of any transportation management professional's career. I am very lucky and grateful to have had the opportunity to participate and would do it again gladly.

b. Yes, and I might even like to complete the full MSTM degree requirements someday. However, I have not heard any positive experiences of the capstone/thesis coursework.

c. Yes and Yes (I have). I'd also like to say that Viviann was very helpful in answering procedural questions and keeping us informed. Even though you are far away, I never felt out of touch with the program.

d. Overall it was a good experience...would like more support from D5 and more support in form of finances. I did get a couple of grants, but still spent over \$2,000 of my own money and that was just for a certificate (which hangs on the wall in my office–thx). I would continue to recommend, but hope there is more support.

TRANSPORTATION PROFESSIONALS ANALYSIS OF SURVEYS AND INTERVIEWS

Method

Seventy-two online questionnaires were sent to transportation professionals across the country. Thirty-eight responses were gathered representing a 53 percent response rate. Twenty of these responses were returned online; eighteen responses were gathered through personal interviews. The same structured questionnaire was used for online responses and interviews. The survey instrument can be found in Appendix E.

General Analysis of Transportation Professional Interviews

Quantitative and qualitative results of transportation professional interviews are summarized in relevant categories below. Recommendations are provided at the end of this section. Representatives of a variety of transportation-related organizations were surveyed. The overall sample includes the following types of organizations:

Table 35: Type of professional organization responding

		Organization Type			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	State Departments of Transportation.	12	31.6	33.3	33.3
	Port	3	7.9	8.3	41.7
	Regional Transportation Authority	8	21.1	22.2	63.9
	Transportation Consulting Firm	6	15.8	16.7	80.6
	Airlines	2	5.3	5.6	86.1
	Transport	4	10.5	11.1	97.2
	U.S. Dept of Transportation	1	2.6	2.8	100.0
	Total	36	94.7	100.0	
Missing	System	2	5.3		
Total		38	100.0		

Preference for an M.A. or Certificate

In an effort to determine which types of degrees are most marketable to the transportation industry, respondents were asked which type of degree they preferred for their managers. Fully 60 percent of respondents indicated that they had no specific preference if asked to choose between the MSTM, the Certificate in Transportation Management, the MBA, or the MPA, as preparation for their managerial positions.

However, among the 40 percent that did have a preference for managerial graduate training programs, the master's degree in transportation management was mentioned most often. Seventy-three percent of those with a preference mentioned the MSTM degree as one of their preferred graduate degrees, followed by the MBA (60 percent), the MPA (46.7 percent), and the certificate program in transportation management (26.7 percent).²

When the data are divided between public and private industry, a difference emerges. As expected, private organizations are less interested in the MPA and more interested in the MBA degree. However, interestingly, private industry is also more interested in the certificate in transportation management than are public organizations.

Table 36: Professional responses—preferred degree type

Degree	Preference-Public Org	Degree	Preference-Private Industry
MSTM	33.3	MSTM	33.3
MBA	25.0	MBA	33.3
M.P.A.	20.8	M.P.A.	16.7
CTM	8.3	CTM	33.3
No Pref.	54.2	No Pref.	50.0

Private industry interest in the certificate in transportation management was explained by a Principal at Fehr & Peers:

The public sector might be more inclined to want a master's degree in transportation management. We look more for a managerial certificate once an employee has had 5-6 years of technical experience. In our company, over the first two years an employee is basically only responsible for his own time. As he moves up through the ranks, he will need increased management training and expertise... Employees in the private sector must do their own hands-on analysis in addition to working well with clients and internal staff. Civil engineers and techs can't be put in front of a client in the private sector.

A representative from public industry explains their preference for a master's degree:

We definitely prefer a master's degree over a certificate course. The master's degree ... has historically proven to be more broad-based and encompasses a much wider discipline. We will consider experience in our managerial candidates, but it must be extensive and sprinkled with continued education. (Human Resources: San Mateo Transit/Caltrain)

It is also useful if the transportation professional has specific training in the discipline that he will oversee. Many organizations pointedly look for training in substantive disciplines that provide specific area expertise; this may include an undergraduate degree in engineering or science technology.

The Typical Managerial Path

When respondents were asked to indicate the managerial promotion paths in their organizations, 90 percent of respondents included "promotion from within" as one of the typical pathways for promotion, 55 percent included "managers move laterally from like organizations," 15.8 percent reported recruiting managers "through student internships," and 10.5 percent reported recruiting managers directly "from universities." In addition 10.5 percent volunteered that their managers were often recruited from summer executive internship programs.³ Again, respondents mention that they often look for specific area expertise in managers.

Need for Additional Education

When asked what proportion of managers are expected to require additional training at some point during their career, 58 percent responded that they expected all (100 percent) managers to receive ongoing education and training.

As one respondent stated:

We require every new employee to complete an Educational Development Plan (EDP) at the time of hire which sets forth a two year plan for training based upon their position, needs, background, etc. (Office of Human Resources—Ohio Department of Transportation: Columbus, Ohio)

And from private industry:

Continuing education is always encouraged to employees at review time. In our business, learning never stops. The firm will on a case-by-case basis support a high commitment by an individual to obtain additional degrees or selective courses, which will aid in the improvement of the business. There will always be a need for further education. (Executive Vice President: Transmetrics)

Circumstances and Content of Needed Education/Training

Respondents were asked to indicate which courses their managers were likely to require when additional training was needed. Results are presented in the following table.

Table 37: Professional responses—desired additional managerial training

Courses	Proportion Responding This is “Needed” Additional Training for Managers
Interpersonal and Communication Skills	73.7
Labor Relations Laws	63.2
Transportation Policy and Regulations	63.2
Essentials of Management /Leadership	78.9

Courses	Proportion Responding This is “Needed” Additional Training for Managers
Accounting and Finance	28.9
Marketing and Business Development	23.7
Transportation Systems Planning and Development	60.5
Environmental Impact Issues	31.6
Technical/Engineering Training	31.6
Latest Advances in Transportation Computer Software	42.1
Project Management	71.1

The concern for continuing education is a constant theme. The Mississippi Department of Transportation supported the idea of individual personal development plans that are required at the time of employment and updated consistently.

Interpersonal and Communications Skills

Approximately three-quarters of surveyed organizations mentioned that their managers needed additional training in “interpersonal and communications skills.” When discussing this issue, they often referred to the related skills as “people skills,” or “interpersonal relations,” and explained that although managers are often promoted because there are technically adept and have appropriate degrees, many new managers have little or no understanding of how to work with subordinates, inspire their employees, motivate employees, deal with personnel problems, and/or resolve conflict. In public and private industry this deficit has become a primary focus when considering the need for additional training. This is explained by a respondent representing a public organization:

All of our managers require, and are encouraged to continue their education. Our managers tend to be very technically proficient, and our promotions are based on technical expertise. Although we recognize it as an ongoing problem, most managers are quite shocked when upon their promotion they are unable to motivate those under

their supervision. They are severely lacking in the skills necessary to remedy personnel issues. (Human Resources: San Mateo Transit/Caltrain)

Along these lines, the need for enhanced skills in conflict resolution/dispute resolution was repeatedly mentioned by respondents. And, as a subset of interpersonal relations, the issue of diversity and sensitivity to ethnic, racial, cultural, and gender diversity were mentioned as areas in which managers are often ill-prepared for their leadership role.

The Commissioner of the Kentucky Transportation Cabinet noted that:

Management and leadership training courses are abundant. To ensure prepared managers, universities should plan for conflict resolution, diversity training (including gender communications training) and public policy training...the day-to-day nuts-and-bolts of truly successful management.

In addition, a COO for one state Department of Transportation stated that, “engineers need to be exposed to broader business and communication principles earlier in their careers,” indicating that the attempt to educate the manager after they are in the managerial environment is not as effective as heading off problems before they “mature.”

And, of course managerial leadership and direction affects the organization in a myriad of ways. “Manager support is key. Supportive managers produce smarter workers using right rules and effective techniques.” (Human Resources: Bay Area Rapid Transit)

A consulting firm added that new managers “... seem to need training in communications skills, organizational skills, responsible attitude (although I don’t know how you train that), leadership skills, time management, presentation skills ... ” (Vice President, URS: San Jose, California)

The new manager must develop more than the efficiency and knowledge that have preceded their promotion in an organization. Managing human beings is a complex art and must also be studied. In the area of continuing education there is distinct agreement among respondents; managers must develop a new set of skills. Skills that were mentioned include coaching, emotional intelligence, visioning, mentoring, and goal-setting. In most cases coursework and experience prior to the managerial position does not prepare managers or train them in the art of motivating, inspiring, and disciplining employees. The fact that the foundation for effective

management includes the ability to motivate others, the ability to turn around poor performance, and general management of human resources, became a recurrent theme in interviews.

Writing and Presentation Ability

Within the general category of communications, anyone who has taught at the university level realizes that many students arrive (and perhaps depart) lacking in writing and presentation ability. One state-level DOT put it quite simply “writing skills are generally lacking” (Pennsylvania Department of Transportation). However, the pressure to teach these skills is matched only by intensive time and effort required when professors attempt to give students individual attention in this area. In transportation management, individuals are often required to deal with the legislature, the public, and the media.

In an attempt to rectify this situation, the U.S. DOT provides courses in “Writing in Plain English,” training in the provision of clear explanations for quantitative results and training in effective public speaking, noting that employees are often promoted to managerial positions because of technical expertise, but “are not proficient at basic managerial skills, including public speaking.” (Manager: U.S. DOT)

Management and Leadership

Approximately 79 percent of organizations surveyed mentioned that management and leadership courses were sought out for new managers. New managers often lack basic skills. In addition to inexperience with public speaking, they may not have experience with interviewing, background in labor relations laws as they relate to employee discipline and discharge, or the ability to conduct effective evaluations, and leadership skills may be lacking, including any understanding of competency-based leadership and/or organizational leadership.

Respondents mentioned that managers often do not understand strategic planning, forecasting, business logistics, or even public relations and associated media skills (Kentucky Transportation Cabinet). In addition, managers must learn to use resources effectively, use and understand basic concepts in business such as cost-benefit analysis, cost-effectiveness analysis, profit and loss statements, forecasting, “budgeting 101,” and government finance.

One executive noted:

They need to teach courses in project scope, budgeting, organizational techniques, business etiquette, leadership, management techniques, project management, and finance. Also, I think that they need to emphasize public transit... We would like to see our managers get better at controlling the scope and budget of projects. Maintaining quality is always important. (Vice-President, URS: San Jose, California)

Political Savvy

A successful manager in transportation policy will understand the political environment within which transportation policy operates. Suggestions for courses in this area include “The Politics of Government” (Kansas DOT) as well as courses in legislative process and media relations. In the area of pragmatic political ability, the Bay Area Council states that:

... courses that would be most beneficial for our purposes would be practical politics, that is effective campaigning methods and marketing. We work as liaisons between government officials, elected boards, state legislators, local business, and media to find workable answers to transportation and infrastructure issues. We might have all of these people in a room together and we’re responsible for presenting and communicating the ideas and issues knowledgeably—much like marketing a product. These are the types of skills our managers must possess, as well as writing and leadership ability. (Vice-President, Bay Area Council)

Projects: Substantive Understanding

Respondents often mentioned the need to train managers to understand applied analysis, that is, the use of appropriate managerial techniques in the specific substantive area that is relevant to the project they are directing. One respondent noted that “there needs to be a heightened awareness of the future of transit and cost issues as they relate to transit.” (Vice President, URS: San Jose, California)

Substantive understanding would also necessarily include an understanding of the regulatory environment within which policies develop, including updates on new regulations that affect the project, training in environmental impact issues, and updates on legal issues that affect project development and implementation. Organizations often take advantage of seminars offered by regulatory agencies which provide training that acquaints managers with new regulations.

A human resources specialist for a regional transit district mentions that:

The days of multi-channel, one-size-fits-all courses with attendees from every business sector are no longer desirable or effective. To be pertinent, courses should be tailored enough to the meet specific needs of the transportation industry. (Senior Specialist–Human Resources: San Joaquin Regional Transit District)

Project Development and Project Management

Fully 71 percent volunteered “project management” when asked if there were other areas in which managers needed training. Managers often do not know enough about transportation-specific project development or the management of projects from inception to completion. This, of course, includes basic managerial and business skills such as contract administration and project controls, but these activities do take place within the unique circumstances of the transportation project, developed and implemented in the midst of changing legislative priorities, evolving public opinion, and media scrutiny. These circumstances require that business skills integrate and build upon a substantive understanding of the entire context of the given transportation project.

Project Development and Marketing

Only 24 percent of organizations mentioned marketing training for their managers; yet when marketing is necessary, training can be invaluable. Transportation managers are sometimes called upon to market an idea or a plan and must be aware of modern methods of marketing and how to work within the political apparatus to produce support and help to bring about successful outcomes.

Software Skills

The need to understand transportation-related computer software was mentioned by 42 percent of respondents. As new iterations of transportation-related software continually appear, managers and others require efficient training in their use.

For our purposes, the coursework needed depends on the employees’ position. A 2-3 day software course that exposed our newly recruited undergraduates to a widely used program called “Synchro” would be of great benefit. This program assists in analyzing

traffic signal location. Most of the interns we hire, or our new recruits, have never had the opportunity to work with this program. (Principal: Fehr & Peers)

A consulting firm notes that transportation projects require unique and continually updated skill sets:

In design management, it is important for engineering management to at least be able to understand the capabilities of CADD to effectively communicate with the operators or technicians. Directions given are often inadequate and based on old hand drafting approaches and not current automation procedures. Contract administration procedures are important from an administration and liability basis. Design-build contracts being used require a little more understanding to manage. Leadership skills are important for a manager. Project control procedures are a must for a project manager. (Executive Vice President—Transmetrics, Inc.: Campbell, California).

Ethics

One respondent stated that the one area of critical importance which necessitates additional training for managers is “ethics.” Other respondents mentioned it as an important and underemphasized area in graduate programs. A consulting firm noted that “Ethical behavior and assistance to others in this matter are a professional imperative.” (Executive Vice President—Transmetrics, Inc.: Campbell, California)

Specific Courses Necessary for Success

Respondents were asked if there were any other “specific courses” that they would like to see offered to managers. Results as indicated in the table below demonstrate that the concern for communications issues and basic managerial and business principles remains dominant.

Table 38: Professional responses—desired additional training

Are there any specific courses that you would like to see offered?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Communications and Management	16	42.1	53.3	53.3
	Conflict Resolution	3	7.9	10.0	63.3
	Ethics	3	7.9	10.0	73.3
	History with Case Orientation	1	2.6	3.3	76.7
	Urban Needs and Neighborhoods	1	2.6	3.3	80.0
	Time Management and Leadership	5	13.2	16.7	96.7
	Business Principles and Cost Effective Use of Resources	1	2.6	3.3	100.0
	Total	30	78.9	100.0	
Missing	System	8	21.1		
Total		38	100.0		

A consulting firm mentioned one universal niche in transportation:

All engineering individuals aspiring to climb the management career ladder require continuing education to transition to management, and require associated on-the-job experience to apply such principles... Managers need to pick up along the way the organizational and people management experience and skills. They need to learn negotiation skills, business management principles, better speaking and writing communication skills for presentations and general business practice. There is more and more pressure to learn MS Office products to increase productivity or be able to communicate with others what deliverable is needed. (Executive Vice President—Transmetrics, Inc.: Campbell, California)

Along these lines the San Mateo Transit interviewee explained that the most beneficial courses would combine training and follow-through.⁴

“How to Transition from the Rank and File to Manager.” Managers must understand, and be ready to adapt to the dynamic changes in their employee relations and what methods can be used to avoid meltdown. As an example, it no longer may be appropriate to have a beer with colleagues after work—relations change. New interpersonal skills incorporating psychology as an effective managerial tool could be taught in a nightly, say a 3-hour course over one week.

Then, for a period of about 2 weeks, the manager puts these new skills to the test. At the end of the 2 weeks, or set period of time, the manager reports for a follow-up session where skills are assessed for effectiveness and any implementation problems are discussed—i.e. what worked, what didn’t and why. This technique would be more effective than merely attending a course with no follow-up or feedback. Courses culminating in a specific project would also be helpful. (Human Resources Director of Employee Programs and Development: San Mateo Transit/Caltrain)

Respondents also mentioned the value of internships; this conviction was demonstrated most eloquently by the Director of the Surface Transportation Policy Project when he explained that:

A perspective that is based upon experience with urban need and interaction with the local population/neighborhood would give someone with a technical/academic background a more diverse and well-rounded exposure to the issues... effective managers should participate in fieldwork, have practical experiences, and acquire the formal education—eventually putting it all together to implement public safety policies and transportation policies that will best serve the public interest. (Director, STPP)

In fact, the STPP offered to work with the Mineta Transportation Institute to create internship opportunities for students stating, “We could incorporate a summer project or internships with your program that would meet both our needs. I would be happy to work with someone at the institute to help set-up a revolving door.”

Presence and Satisfaction with In-House Training

While 52.6 percent of respondents reported that they conducted their own in-house training and were satisfied with it, 23.7 percent stated that they provided in-house training but it could be improved, and 21.1 percent responded that they did not provide in-house training.

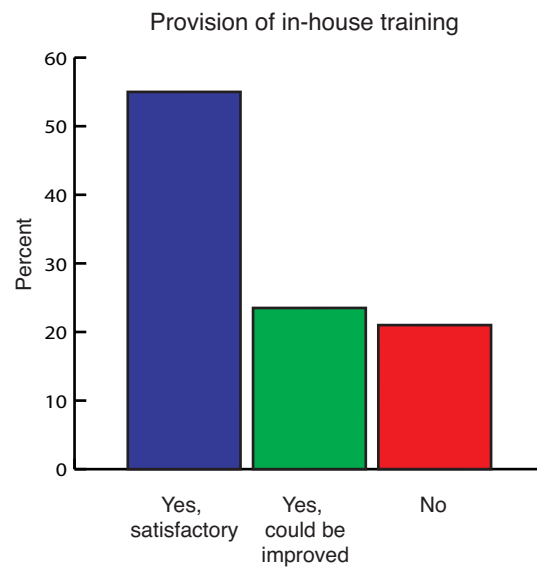


Figure 32: Satisfaction of professional in-house training

When training was offered in-house, respondents described courses in leadership, professional development, project management, and administrative skills. Types of training provided by organizations surveyed varied from minimal to extensive. An example of extensive in-house training would be the Kentucky Transportation Cabinet which notes that the State of Kentucky provides a statewide certification program in public management that is nationally accredited.

The Tennessee DOT also has an extensive program and has organized their training based upon six key competencies, including “(1) Leadership, (2) Communications, (3) Organizational Effectiveness, (4) People Management, (5) Operational Management, (6) Strategic Thinking and Change Management.” (Coordinator, TDOT Executive Workforce Development Office)

Their courses include:

- Leadership Initiative Awareness
- Public Relations with the Media
- Role of TDOT Manager
- Coaching
- Organizational Policies & Practices for Managers
- Communicating & Listening
- Customer Service
- Conflict Resolution
- Diversity
- Bridges for Humanity
- Choices
- Managing Team Performance
- Managing Personnel Performance
- Conducting Effective Meetings
- Team Building
- Time Management

(Coordinator, TDOT Executive Workforce Development Office)

They note that they would like to see more “knowledge transfer courses that support” and train managers in these specific areas, and a “focus on organizational specific competency development.”

Representatives of state departments of transportation mention using the American Association of State Highway & Transportation Officials’ (AASHTO) executive training program for continuing education for their managers when they were needed to increase basic and advanced managerial skills. The AASHTO conferences and training seminars were well regarded.

Necessity or Interest in Continued Education Through Short Courses

The short-course or weekend-intensive format was generally preferred when compared with responses to queries about interest in online courses. Seventy-one percent of respondents stated that they have a need or will have a need for short courses, while only 29 percent of respondents stated that they have a need or will have a need for online courses.

When asked which courses they would like to see in a short-course intensive format, respondents recommended courses in public relations, media skills, strategic planning tools, and undergraduate level intensive overviews of engineering and science. Respondents also mentioned new management concepts and emerging issues in policy and law.

Table 39: Professional responses—need for short course continuing education

Does your organization have a need for continuing education of managers through short courses?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, Immediate Need	18	47.4	50.0	50.0
	Yes, Future Need	9	23.7	25.0	75.0
	No Need.	8	21.1	22.2	97.2
	Not Sure	1	2.6	2.8	100.0
	Total	36	94.7	100.0	
Missing	System	2	5.3		
Total		38	100.0		

The interest and enthusiasm for the short course format is illustrated in the following quotes:

I'd like to see a course offered in best practices and emerging issues identified throughout the country—not just at the state level—keeping myself as well as my co-workers current on identifiable issues and trends. This will be the wave of future success in meeting the needs of the transportation industry and the public. (Vice-President, Bay Area Council)

The types of courses that would be most valuable for us locally, and for those headquartered in Dallas, is training in California law, or state law for that matter. California law is quite different than that of Texas and other states. Our legal team in

Dallas finds itself scrambling to bone up on the pertinent law, when an issue arises in California, or elsewhere. So short courses, or online courses for that matter, that provide a review of relevant changes in state law would be quite useful. (Manager: American Airlines)

Fehr & Peers mention that they have:

... sent people to 1-2 day courses at UC Davis in project management techniques—listening to others as to what innovative techniques are working for them so that we can glean for our own use... land use and transportation issues... [b]udget development and management would be a very useful course for any program to include, even as a 3-day intensive course.

They also state:

Short courses, intensives, and online courses that teach California transit law, and any courses that would help managers manage the specific transportation processes of project completion, the review, and what it takes to move a project through the system from start to finish would be beneficial.

According to the Mississippi Department of Transportation, timeliness and convenience are almost as important as what is being taught—managers need to be able to access courses easily and without too much effort. They advise that web streaming technology will continue to facilitate the learning process for managers.

Accordingly, the closed-circuit television model that has been successfully promoted in the MSTM program at SJSU is extremely popular.

Assessment

Importantly, public organizations also express an interest in determining the effectiveness of those courses that they purchase for their managers and implementing some effort to track the development of these managers.

“We would like to see a structured curriculum ... basically keeping track and making sure that employees are well-prepared for the next step.” (Human Resources Director, Port of New Orleans)

Necessity or Interest in Continued Education Through Online Courses

Our interviews elicited mixed responses on preference for online courses. There is certainly interest; however, most feel that a 100 percent online format will not provide the sort of human interaction that is believed to enhance managerial education. This is particularly the case with the oft-cited underperformance in general and interpersonal communications. Overall, Departments of Human Resources do not support the notion of learning to communicate through an online format. Interpersonal/class interaction has been described by many as “invaluable to a truly educational experience.”

Table 40: Professional responses—need for online course continuing education

Does your organization have a need for continuing education of managers through online courses?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, Immediate Need	8	21.1	25.0	25.0
	Yes, Future Need	3	7.9	9.4	34.4
	No Need	14	36.8	43.8	78.1
	Not Sure	7	18.4	21.9	100.0
	Total	32	84.2	100.0	
Missing	System	6	15.8		
Total		38	100.0		

Online training was mentioned negatively several times—a few quotes include:

- “We have not experienced good results with online courses to date because the interpersonal/class interaction is not there. We have found interpersonal and class interaction to be invaluable to a truly educational experience.” (Kentucky Transportation Cabinet)

- “Online does not provide an ideal environment for this level of training. It should be highly interactive with the instructor and between the participants.” (a state transportation agency)
- “We specifically don’t think the online format works for leadership and management courses. These are best when there is class interaction.” (State Transportation Agency, Louisiana)
- “People prefer conferences where they can interact with their peers—the online environment is boring and undesirable—what we are looking for is not offered in that format.” (U.S. DOT)

When online courses were mentioned as an area of interest, it was often with specific reference to information technology courses or courses that were quantitative and constrained; that is, they have clear goals and objectives that can be met in the online environment. (Note: This is similar to student preference, as mentioned in the earlier section—students feel that a highly quantitative course like accounting could be offered online, while policy or management courses should have real-time classroom interaction between students and professor.)

The San Joaquin Regional Transit District remarked:

We would be interested in utilizing extension courses geared for adult learners, over one day or several. Evening, weekend, and distance-learning courses would be helpful, especially those that are self-paced with periodic tests to show proficiency. However, management skills that require modeling and/or personal interaction don’t lend themselves to on-line or distance learning. Management skill modeling takes practice. The online format is better suited to courses that train precise, measurable, quantitative skills. (Senior Specialist–Human Resources: San Joaquin Regional Transit District)

Exceptions were noted however. Kansas’ Department of Transportation offered that online courses would be useful to provide leadership training as well and mentioned the following specific subject areas—“Budgeting, finance, leadership styles, mentoring skills, goal setting, visioning.” (Training Manager: Kansas’ Department of Transportation)

Although Georgia’s Regional Transportation Authority preferred on-site courses and did not currently have a need for online courses, they did state that, “Online courses are the wave of the future and should be looked at as a viable way of training managers and staff.” (Human Resources Manager: Georgia Regional Transportation Authority)

Table 41: Professional responses—type of online courses desired**Which types of courses would you like to see offered in an online course format?**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Budgeting and Finance	3	7.9	42.9	42.9
	GIS and Statistics	1	2.6	14.3	57.1
	Campaigning	1	2.6	14.3	71.4
	Organizational Competency Development	1	2.6	14.3	85.7
	Transit Law	1	2.6	14.3	100.0
	Total	7	18.4	100.0	
Missing	System	31	81.6		
Total		38	100.0		

Improving Education for Managers

As a final item, transportation managers were asked, “Overall, and from your experience, how can education and training for managers be improved so that they will perform more effectively in the transportation industry?” This question elicited several detailed replies. The Kentucky DOT had very specific ideas about what constitutes a quality transportation management education:

Transportation management is not transportation planning, i.e. planning roads, etc.—that’s a function of industry. True managerial skills needed should focus on visionary and person-centered skills required to deal with scores of legislators, concerned citizens, and scrutinizing press. More training is needed in public communications—interpersonal communications focusing on conflict resolution, partnerships, and human capital management. Workforces are changing dramatically, and the technological approach may not accommodate the human factors. There is so much emphasis on technical performance that managers forget to apply the human touch. While this can be trained in leadership classes, its application is better learned through interpersonal skills training. (Human Resources Management: Kentucky Department of Transportation)

According to one respondent from private industry, a focus on more traditional training will enhance transportation management education.

There should be more emphasis on corporate relations, including business courses and business management training. Managers need to know more about funding and municipalities, fiscal appropriations, client management—including helping clients to determine sources of funding, creating client satisfaction by controlling the scope and budget of the project, and maintaining quality control. They need to understand how to complete a project review. Just learning to manage technical quality and maintain managerial quality is extremely important as is combining these abilities with good communication skills and presentation skills.” (Vice President, URS: San Jose, California)

And according to a public organization, improving transportation management education requires more emphasis on communications skills and ability:

Managing up rather than down. Managing your boss by knowing yourself and understanding “influencing strategies.” Know yourself and how to motivate others by using effective communication skills and learning how to run effective meetings. Specifically, from a technical standpoint, understanding labor procedures has been a weakness for those who have received primarily technical training. Labor relations is another key point. Learning to cooperate, negotiate, and collaborate with officials from up to five unions is key in our industry, as well as knowing their procedures and our responsibilities is extremely important. (Human Resources: Bay Area Rapid Transit)

An emphasis on broad based training will improve transportation training according to a national-level public organization:

We find that new employees often don't know both transportation policy and statistics; they know one or the other. Graduates of these programs should be familiar with many modes of transportation—land, air, sea—and many issues including security, economics, and environmental impact. In addition, they should be aware of domestic and international issues. Often, our employees are passionate about certain types of transportation, but need to be able to be analytical and policy neutral. They also need to know how to deal with local and state governments that want specific information and data. We like to see people that have a larger perspective, can gather the facts and

present them well. They should be able to effectively summarize data and combine qualitative and quantitative understanding. Effective managers need to understand the meaning of these numbers, not just be statistically proficient, but be able to find and present the interesting pieces of the puzzle. They need to be able to understand and discuss the impact of the program or policy, to be able to answer the “so what” question. Finally, effective managers must understand the regulatory environment, the legislative process, the politics of transportation. (Manager: U.S. DOT)

Many respondents mentioned the importance of working within and understanding the political environment that all transportation professionals must deal with. An illustrative quote emerged from Kansas. The training manager at the Kansas DOT in Topeka stated that the best way to improve education and training so that managers could perform more effectively would be to “provide hands on learning activities that address the political environment, the state legislature, the budgeting process, finance, organizational culture, organizational knowledge, etc.” (Kansas Department of Transportation)

Essentially the same sentiment emerges from private industry—“Legislative issues in transportation would... be an important course.” (Chief of Staff—VTA, San Jose, California)

Finally, from West Virginia comes a recommendation that we coordinate all of the multiple transportation training on a national level. “...Coordination on a national level of transportation-oriented entities and their training/development programs would be helpful.” (West Virginia DOT)

DETAILED RECOMMENDATIONS BASED UPON TRANSPORTATION PROFESSIONAL INTERVIEWS

Recommendations—Transportation Management Graduate Program

- **Educational Development Plan.** Many graduate programs require a prospectus from entering graduate students that sets forth a form of Educational Development Plan—SJSU’s MSTM program might consider requiring students to write an outline of their academic plans, including preliminary ideas for a final project, and have this plan approved by the program. This type of requirement fulfills a variety of objectives, including teaching the student to develop personal plans of action, teaching them to evaluate what it is they do not know and what it is they want to learn, teaching them to take personal responsibility for the acquisition of skills and

knowledge that are necessary for advancement in their field, and teaching them to visualize their future and make the decisions necessary to get them there. These skills also translate directly into effective managerial strategies.

- **MSTM/MBA Option.** In light of the continued emphasis on the acquisition of managerial skills, SJSU should consider a joint MSTM/MBA degree as an option that is facilitated by both programs and streamlined for students in the program. This would augment their marketability in the field and increase their skill set. This has also been mentioned by some students and alumni, when considered in light of industry preference and student request, it should certainly be investigated as a possibility at SJSU.

Recommendations–Curriculum

- **Course exclusively devoted to leadership training.** Although there is mention of leadership training in the curriculum of the SJSU program, many students and most professionals have requested that this be emphasized in a transportation management program. Accordingly, it is recommended that SJSU include a course exclusively devoted to leadership training in the curriculum—this course should include interpersonal relations, motivating others, management of human resources, and conflict resolution.
- **Case-oriented curriculum.** Implement a case-based curricular focus into the program. It is clearly important that training use transportation issues and policies as the basis for examples, thereby facilitating area-specific knowledge and the ability to apply general managerial, business, and quantitative skills to transportation problems. This decreases the learning curve once on the job and makes the coursework much more meaningful for the students who are, for the most part, already working in the field.
- **Project Management.** Promote the transportation-specific project management course that already appears in the curriculum. Encourage professors to develop case-based curriculum and encourage students to develop projects that track transportation projects, apply relevant analytic techniques to the project, analyze the effect of legislation, regulation, media attention, and public opinion on the final implementation of the project. (Note: Students also mentioned that they would like to be better trained to develop, implement, oversee, and manage projects.)

- **Writing and Presentation Skills.** Most graduate courses now include a presentation element and a written report—either research or project-based. It is recommended that each student be assigned a writing mentor and a public-speaking mentor (could be the same individual) to help them to improve these skills.
- **Agency Workshops.** Consider whether regulatory agency workshops would be appropriate for advanced graduate students working on a related topic for their final project. The program could provide a scholarship for interested students.

Recommendation—Internships

- **STPP Offer.** Investigate the potential opportunity of collaboration with James Corliss of the Surface Transportation Policy Project. This would provide valuable experience and help graduates to integrate coursework into the realized needs of communities.
- **International Internships.** Students and employers are interested in manager exposure to a variety of work environments. If the Mineta Transportation Institute can arrange for international internships for some of their best students, this would serve both students and industry.

Recommendation—Short Courses

- **A Public and Private Market Exists.** A clear market for short courses exists in both private and public industry. The key is to design courses that teach skills and provide updates necessary for the successful transportation professional.
- **Regulations, Laws, Emerging Issues.** Short or weekend-intensive courses on emerging issues, regulatory changes, and changes in relevant law at the state and national level would be popular and could be marketed to public and private organizations across the country. Transit professionals could be brought in as adjunct lecturers to run these intensive courses.
- **Predictable “Update” Courses.** Offer an “Update in Emerging Issues in Transportation” intensive weekend course twice a year.
- **Writing and Presentation Skills.** Intensive weekend courses that develop writing skills and train managers in public speaking would be well received and marketable

to a wide variety of managers. The presentation element of the course should include a section on clear presentation of quantitative results.

- **Software Training.** Short courses on the use of relevant transportation software would be popular and useful for current students as well as managers from public and private industry.
- **Industry-Specific Business Skills.** Managers must have a dynamic concentration of management skills and substantive background. Training in forecasting, benefit-cost analysis, cost-effectiveness analysis, and other quantitative methods in transportation policy would be invaluable for working professionals.
- **Marketing Short Courses.** The AASHTO short courses could provide some ideas for intensive courses that might be offered by the SJSU program. It would be worth investigating whether the SJSU intensive weekend courses could be marketed through the webpages of professional conferences specializing in public policy, public administration, or transportation issues.

Recommendation–Assessment as a Marketing Tool for Short Courses

- **Assess Courses and Market Results.** The VTA mentioned that they would like to see some assessment of learning gains in these types of short courses. SJSU could consider some method of assessing student satisfaction and/or learning attainments in the short courses that they offer. An instrument distributed to students before they leave the course could give immediate feedback. These results could then be used to market later courses. The VTA respondent in San Jose also mentioned that short/intensive or weekend courses really need to be taught by transit professionals; otherwise they are too general and not as useful. These courses need to reach those who are working in the field, provide enough context and explanation so that new employees are benefited, but also provide enough depth so that experienced employees also benefit—if that is the case, assessment will be positive and can increase enrollment.

Recommendation–Online Courses

- **The Market is Not Ready.** It is recommended that SJSU not attempt to market a 100 percent online course at this time. Using online as a component of a short course in which the students meet in person or teleconference will be more popular at this time. The teleconferencing approach has support from students and

professionals alike. Satellite downlinks should also be considered for nationwide courses (budget allowing). Marketing the teleconferenced course or satellite downlinked course would be much easier and more profitable for the Institute.

- **If You Must—Go Quantitative.** If the SJSU Graduate Transportation Management Program does decide to attempt to market an online course, it is the opinion of professionals and students alike that this course be quantitative in nature. The Department of Transportation in Pennsylvania puts it succinctly, “We currently have a need for online courses in GIS and Statistics” (Bureau of Planning and Research, Pennsylvania DOT: Harrisburg, Pennsylvania). Others mention specifically that the only online courses that they would be interested in supporting for their employees would be quantitative with constrained subject matter, clear goals, and achievable objectives.

Recommendation—The Next Step

It is clear that state DOTs have educational needs and often combine those needs with distributed videoconferencing facilities that emulate Caltrans. These state agencies are most often interested in short courses identified above. They usually have dedicated funds for training and travel, and should represent the next foray for marketing attempts on the part of the Graduate Transportation Management Programs at SJSU. Based upon interviews, the competition for these available funds usually comes from agency workshops and/or state level in-house education programs. SJSU is therefore positioned to attract these types of short-term students and should develop and market short-term intensive courses and certificates to state DOTs.

SJSU is in a unique position to differentiate itself and effectively market these short-term intensive courses as occurring in a university format. As previously mentioned, it is recommended that these courses be taught by transit professionals. The fact that transit professionals are teaching these courses provides yet another marketing tool.

THE STATE OF DISTANCE LEARNING

Distance education at American colleges expanded substantially during the online-education takeoff of the late 1990s, with more colleges offering more distance-education courses and more students taking them. Enrollment in for-credit distance-education courses grew to 2.9 million in the 2000-01 academic year from 1.3 million in 1997-98, the Education Department's National Center for Education Statistics estimated.⁵

INTRODUCTION

... [E]ducation is at a critical crossroads, which would have been reached without web-based learned but which web-based learning techniques are escalating more rapidly than expected.⁶

Along with vast growth, distance learning continues to undergo changes in philosophy, technology, and implementation. Any decision to adapt or change the method of transmission for lectures and/or other requirements for the graduation program in transportation management should be informed by clear learning objectives that build upon accepted philosophy, current technology, and feasible implementation. This section of the needs assessment evaluates current technology as it relates to the manner by which information is imparted and students are taught when distances exist between educator and student. Of course, pedagogy should work seamlessly with the technological delivery system.

There are many hurdles to overcome in the interactive technology-based educational environment. Educators must learn new skills simply to use classroom technology, and must adapt existing skills to enhance teaching across a “digital divide.” Maintaining competitiveness in the technological domain of distance learning also requires the use of up-to-date technology in the delivery of information in a format that is accessible, interactive, and dynamic for both student and professor.

RELEVANT TECHNOLOGY

Videoconferencing

The concept of distance learning is by no means a revolutionary idea. With the advent of television, many believed that one of the primary uses of the new medium would be to educate the widely dispersed population of the United States. This idea never came to full fruition in the manner that its primary adherents had envisioned. However, Carnevale and Young argue that, “some distance-education leaders say the latest wave of online universities has much to learn from telecourse providers,”⁷ and explain that despite the prevalence of the Internet:

Experts estimate that more people take courses each year delivered by television—whether via interactive video networks, videocassettes, or cable or broadcast television—than take courses on the Internet. For a student who doesn’t own a computer or who doesn’t feel comfortable using one, television remains a powerful way to take courses at a distance. And many telecourse producers are rapidly incorporating new technologies, including high-speed data networks, online discussions, and digital videodisks, or DVDs. Many telecourses are taking advantage of the Internet to allow interactions between students and instructors. And as faster Internet connections permit video to travel freely across computer networks, video segments created for telecourses may find their way into a variety of online courses.⁸

At the University of Maine today, the televised course system:

... delivers hundreds of interactive telecourses each year. From the 1997-98 academic year to 2000-1, the number of telecourses offered in the system grew from 216 to 269, while online courses grew from 12 to 142; enrollment in telecourses grew from 11,793 to 14,603, while online enrollments grew from 200 to 3,680. That compares to an enrollment of 32,372 last fall for the entire system.”⁹

Debates have raged at the University of Maine over whether video or Internet-based course delivery should reign, but this is probably a false dichotomy. With web-streaming technology, video is rapidly merging with the Internet. The issue really is how to take advantage of the public’s familiarity with television and televised courses and translate that to the medium of the Internet. In this way, the state of the art in distance-learning technologies will merge with video to promote interaction in the virtual classroom and stimulate effective learning.

In some cases the personal meeting between professor and student is logistically difficult, if not impossible, and this may be the single most persuasive reason for the implementation of online courses. At the University of the South Pacific, serving eleven countries across the South Pacific and extending to an area that is larger than the United States, the traditional classroom is neither practical nor possible. As a result, they have connected to a computer network—USPNet-2000—which allows two-way video and audio transmission and real-time interaction between professors and students. As David Cohen explains:

In practical terms, the new network allows students and instructors from any of the university's member countries, working in their own local centers, to participate in audio tutorials with their counterparts. Students and staff members may take part in, or watch, live video broadcasts of lectures in which participants can see and talk to one another. The capabilities are illustrated by equipment in a conference room here. The room has a couple of large televisions, with a small camera set atop one set and a triangular black microphone on the table next to it. Used together, they link the institution with any of the other 11 points of the South Pacific from which the university draws its student body of some 10,000, about half of whom are enrolled as distance learners.¹⁰

A cautionary note is sounded by Carnevale, who states that online courses must be supported by the university and the relevant program. The individual professor must not feel or act as if they are operating in a vacuum. He asserts that “[e]ven some serious universities ... offer good online courses but do a poor job in terms of providing services, support, or information.”¹¹

However, recent research has shown that academics are generally confident about the future on distance learning technology and online education.

Nearly 3,000 chief academic officers and college presidents, along with 1,000 public and private university representatives, participated in the study. One-third of the respondents said they believe the quality of online education will soon surpass that of the traditional classroom setting. In addition, 57 percent said online classes were almost equivalent in quality to current interactive classes.”¹²

Perhaps one of the reasons for this level of optimism is the rapid evolution of technology. This is most clearly represented by universities attempting to create a virtual classroom, within which students interact with one another and professors in a way that maintains the success of

the traditional classroom environment, while adding technological components that have the capability of meaningfully enhancing traditional learning.

One example of this successful blend of tradition and technology is the virtual classroom created by the University of Arizona's Eller College of Business and Public Administration. The University of Arizona has created what has recently been termed the "virtual environment," or "immersive videoconferencing." Florence Olsen describes the scene of a typical interactive experience in this classroom.

In the Arizona classroom, the distant students appear nearly life-size, on a curved screen that covers much of the front wall. The local students sit in tiered rows a comfortable distance away, mirror opposites of their distant classmates. The room's charcoal-gray tones and indirect lighting lend an ambience more like that of a corporate boardroom than a college classroom. Cameras are placed to create the illusion of direct eye contact. No cords snake across the floor; the network is wireless. The usual electronic and mechanical accouterments of videoconferencing—cameras, analog-digital conversion circuits, microphones—are hidden behind wall panels and ceiling fixtures. At a side wall, a technician sits with his laptop, ready to jump up and flip a switch or adjust a camera if necessary.¹³

The videoconferenced classroom has distinct advantages over more asynchronous delivery methods; as Olsen explains, "the synchronous nature of videoconferencing makes it a superior distance-education technology for business, education, and other social disciplines in which interpersonal skills are a large component of the students' education."¹⁴ The Dean of the Business College at the University of Arizona asserts that a higher percentage of students actually complete their MBA program when in a synchronous rather than asynchronous environment. He states that, "We liken it to Marine boot camp ... It's real hard to get through boot camp without a staff sergeant and without a cohort."¹⁵

The University of Arizona's Business and Public Administration program created the virtual environment by contracting with TeleSuite, a company based in Ohio that designed and manufactured their classroom system. Existing classroom space was used to create the "virtual collaboration environment" (TeleSuite Webpage, <http://www.telesuite.com>). The graduate students in their program then participate along with other graduate students videoconferenced from Silicon Valley. To facilitate this arrangement, the University of Arizona leased 3Com's TeleSuite room in Santa Clara and arranged for a T1 data line to connect to the

3Com TeleSuite room and an additional T1 line into TeleSuite corporation's private network. This arrangement is quite expensive (\$17,000 per month), but the business school makes a slight profit on these classes and the method meets with their philosophy about building a cohort having real-time relationships with the professors. The technology they have chosen to adapt for their purposes does just that—it creates an environment within which students interact as if they are in the same classroom with each other and, in so doing, learn those communication skills that are so crucial to success in management. To further the sense of the classroom community, professors in the University of Arizona program visit the alternate site in Silicon Valley once during each semester and teach a class from that facility. TeleSuite is, of course, not the only company that provides this service; others do so although not at the level of the immersed academic environment. A brief list of leading companies providing academic videoconferenced classroom technology would include:

- TeleSuite (<http://www.telesuite.com>) Corporate Headquarters—Englewood, Ohio
- Polycom, Inc. (<http://www.polycom.com/home>) Corporate Headquarters—Pleasanton, California
- Tandberg (<http://www.tandberg.net>) Tandenberg Headquarters—New York, New York

Other universities have used the immersive version of videoconferencing for a variety of purposes including the provision of graduate coursework in specialized fields to other universities, videoconferencing faculty meetings, and bringing corporate executives into the classroom as videoconferenced guest speakers.¹⁶

The Online Environment

Given that videoconferencing is increasingly combining with online course content delivery, this section will provide a brief overview of important tools in online teaching. Blackboard, WebCT, and CourseWork assist professors in building their course websites and handling administration of their courses.

- **Blackboard.** Used for asynchronous course management and content delivery. The Blackboard software was originally known as “Courseinfo.” It provides course management for many campuses with three basic levels available for use with Unix and NT servers. The system is based on templates, provides the ability to create

discussion boards for classes, post announcements, deliver course material, and provide links to other internal and external sites. The highest level—level 3—can connect to student information systems at the relevant institution.

- **WebCT.** Also used for asynchronous course management and content delivery. This product was created by the University of British Columbia and intended for use with UNIX operating systems. It includes course development tools, assists with the creation of webpages, and integrates assignments, discussion boards, and grading.
- **The Open Knowledge Initiative Project.** Stanford's Academic Computing Group, partly in response to recent large cost increases by Blackboard and WebCT, has announced an open source release of its new course management system, CourseWork. On June 30, 2003, Stanford allowed access to their code so that any institution could develop and customize its own online course management and delivery system. In so doing, Stanford has provided "non-proprietary, open access to a flexible, scalable course management system" which allows universities to integrate courses with "campus registrar database[s], student information system[s], library systems, and other campus-specific infrastructure systems."¹⁷ The system provides a platform from which professors create home pages for their courses, develop syllabi, post schedules, distribute assignments, organize course materials, and manage student grades. According to their press release "CourseWork is a simple-to-use, robust, scalable system for faculty to develop and present on-line course materials. With the Open Source release, the code is now available for any school to install and customize the system, enabling it to provide instructional web sites for all its courses."¹⁸ CourseWork is free and available for download at this site: <http://getcoursework.stanford.edu/team.html>.

Implementation

"Educators predict that in the future more universities will start to hybridize their courses."¹⁹

The hybridized course is a dynamic concentration of physical interaction and web-based content and clearly the most popular current form of implementation. Along these lines, SJSU Mineta Transportation Institute's transportation management program currently offers courses through two-way videoconferencing originating at San José State University and extending to 12 Caltrans district offices in California. Classes are taught from MTI's virtual classroom at San

José State University's Research Center. Professors include web-based content as a component of their courses and are facilitated to do so by WebCT shells developed specifically for each graduate course. Webcasting and video-streaming are also available online for many courses.

This approach has the unique ability of transcending geographic, cultural and social distances while building an environment where learning, networking, and personal growth are facilitated. The challenge in the words of Jane Southwell Munro is, "to create an environment in which virtual presence outweighs the reality of distance," ²⁰ and SJSU is well on its way to accomplishing just that.

Best Practices

In 1995, Stephen C. Ehrmann, wrote that what matters most is "... not the technology per se but how it is used, [and] not so much what happens in the moments when the student is using the technology, but more how those uses promote larger improvements in the fabric of the student's education ..." ²¹

These thoughts still hold relevance for technology-based learning. The final product, what the student actually learns and is able to use in their careers is key. To this end, assessment of learning in the virtual classroom could and should serve to market the program to those who may believe that education suffers in the distance education equation. Ehrmann also argued that:

... to make visible improvements in learning outcomes using technology, use that technology to enable large scale changes in the methods and resources of learning. That usually requires hardware and software that faculty and students use repeatedly, with increasing sophistication and power. Single pieces of software, used for only a few hours, are unlikely to have much affect on graduates' lives or the cost-effectiveness of education (unless that single piece of software is somehow used to foster a much larger pattern of improved teaching). ²²

This relates to a point made by several students at SJSU. Both students and professors need to be trained in the use of the equipment, so as to facilitate the classroom experience and to provide yet another learning opportunity for students in the transportation graduate programs. Their understanding of how to use the two-way video and audio can translate into

the executive conference room facilitating long-distance communication between departments of transportation, other public organizations, and consultants.

It is crucial to keep educational goals foremost when planning for the virtual classroom. For both students and professors, interaction and facilitated asynchronous learning create the best environment for intellectual growth. Synchronicity in the virtual classroom maintains the ability to teach and mentor with real-time interaction between professor and student. Asynchronous components allow students to work at their own speed through assignments as they would have done, even in the traditional classroom. However, combining the asynchronous component with synchronous delivery of acquired information through realistic interaction between students and professor is clearly an important goal and key to practicing skills important to transportation management.

Transportation professionals agree that communications, public-speaking ability, and conflict and dispute resolution ability are all areas which can and should be improved in first time managers. The maintenance of the classroom environment across vast distances accomplishes several valuable objectives in this regard:

- Real-time interaction allows for interaction between professor and student which demonstrate skills and allow for immediate feedback; and
- Real-time interaction allows for interaction between students so that they may constructively critique each other, network, and derive experience from this interaction; and
- Real-time interaction exposes every student to a diverse student body originating from multiple geographic locations, career experiences, backgrounds, and perspectives.

CONCLUSION

Cognizant of Hubert Dreyfus' argument that human beings attain intellectual competence *without* human interaction and attain a mastery of skills and the ability to use those skills in their careers and in their lives, only *with* human interaction,²³ MTI's Graduate Transportation Management Program is to be commended for continuing to offer a classroom atmosphere rich in the delivery of education and instrumental in building a community of scholars. The key for promoting and implementing online learning is to develop and maintain a healthy

relationship between synchronous interaction and asynchronous flexibility. In an effort to support these twin objectives at SJSU, the following recommendations are made:

- Invite all students to class orientations at the beginning of each semester. Provide instruction on the use of the technology and encourage the students to get to know one another and to develop virtual project teams. Consider providing the orientation on an evening or weekend to facilitate attendance. For those that are unable to attend, make sure that portions of the orientation are videoconferenced. It might be fun for them to socialize and network with their colleagues—even from a distance.
- It is time for the GTMP to expand its course offerings and generate students from other states and internationally. Develop contacts with international universities that might have facilities to be able to participate in the videoconferenced classroom. Students are very excited about the prospect of working with, learning with, and understanding a variety of perspectives, both national and international. At the very least, the program can facilitate global chatrooms for students to discuss transportation policy, projects, and problems with their international colleagues.
- Bring executives into virtual classrooms as guest speakers through videoconferencing. Students have enthusiastically asked for additional speakers and interactivity in the classroom, and transportation professionals have recommended that experts be brought in to discuss project management, communications, conflict resolution, political and legal issues, as well as other essentials of transportation management.
- Encourage professors to hold virtual office hours with a video camera present in their office and use current technology to facilitate two-way communication, so that students and professors can see and hear one another over the web during their consultation.
- Although the sheer number of sites limits the ability of professors in the transportation management program at SJSU to visit each of them, during every semester professors in each course should be given funding and other incentives to visit at least two other sites and deliver lectures from those locations.
- Since students have exhibited some diffidence about 100 percent online courses, do not attempt to teach courses with all asynchronous activity, but build a virtual

community in every course with interactivity and synchronous as well as asynchronous course content delivery.

- Assign a technical assistant to every professor for each session. This person can assist with graphics, PowerPoint presentations, technological problem solving, and other issues arising from transmission of video, audio, and online material. It is essential that students see that their professor has this support, and the resulting presentation is likely to proceed more smoothly and appear more professional.
- Consider using CourseWork instead of WebCT—it is free, easier to use, more powerful, and available for download from the web: <http://getcoursework.stanford.edu/team.html>.

APPENDIX A: STUDENT FOCUS QUESTIONNAIRE

INTRODUCTION

The Transportation Management program is interested in systematically responding to student feedback and continuing to develop the program to meet student needs.

Your thoughtful and honest responses to these questions are very important. Your responses will give the program leadership insights into the aspects of your educational experiences that will guide the development of courses and instruction in the future.

We'll start with specific aspects of the program and then move on to your more general experiences, ideas, and perceptions.

Which program are you working on? **Master of Science in Transportation Management (MSTM)** or **Certificate in Transportation Management (CTM)**

Take a count of how many students in either program.

We're interested in your feedback about the courses that are offered in the Transportation Management Program.

1. Based on your experience, are there an appropriate range of courses offered in the program?

For those of you who answered yes, which courses or types of courses have been the most valuable?

For those of you who answered no, which courses would you like to see offered? Why?

2. Is the content of the available courses relevant in your present jobs? If yes, how are they relevant?

If no, how might they be improved?

3. What about your career goals—is the content of available courses valuable in terms of structuring your career goals? If yes, how? If no, why not?

4. In which ways have videoconferenced classes been valuable? How might they be improved?

Some of the Transportation Management Program courses contain online (or Internet-based) instruction and resources. We are interested in your reaction to online instruction.

5. What is your overall view of the online (or Internet) component of the Transportation Management Program?

6. Do you think that all courses should have an online (or Internet) component? Why?

7. Do you think that any individual courses should be 100 percent online (or Internet)? Why?

We're also interested in your feedback about faculty.

8. In your experience have faculty been generally knowledgeable in their respective fields?

9. How accessible have your professors been?

10. What about advice from faculty—do you receive advice that is useful in focusing your career goals?

11. Do faculty take student backgrounds and differences into consideration as they teach a course?

Is this important to you? How?

We're also interested in the availability of appropriate resources and research materials.

12. Do you find that adequate research materials and resources are available for completing assignments and projects? How can this be improved?

And now for a few summary questions:

13. In which ways is the Transportation Management Program valuable for career professionals?

14. In which ways might the Transportation Management Program improve its degree programs?

Thank you very much for your participation in this focus group!

We appreciate your feedback.

APPENDIX B: ONLINE STUDENT SURVEY

E-mail to Graduate Students

Dear Graduate Student:

We at the Mineta Transportation Institute want to obtain your thoughts and feedback about the Graduate Transportation Management Program (GTMP). Please take a few minutes to fill out a brief questionnaire.

Your thoughtful and honest responses to these questions are very important. They will guide us in our continuing efforts to provide courses and instruction that will enhance career opportunities for our graduates.

To be included in our study we will need your responses within one week. Thank you in advance for your time! We sincerely appreciate your participation.

Please click on the following link and help us to continue to develop the graduate program to meet student needs:

<http://webpages.charter.net/lvalenty696/mi.HTM>

Thank you!

The Graduate Transportation Management Program Needs Assessment Team

See next page for online survey

SJSU MINETA TRANSPORTATION INSTITUTE-GRADUATE PROGRAM IN TRANSPORTATION MANAGEMENT: STUDENT QUESTIONNAIRE

Instructions

The Graduate Transportation Management Program is interested in responding to student feedback and continuing to develop to meet student needs. This student questionnaire is part of an overall needs assessment currently being conducted by the graduate program.

Your thoughtful and honest responses to these questions are very important. Your responses will provide insights and will guide the development of courses and instruction in the future. All responses are completely anonymous - your e-mail address does not appear when data are submitted.

Please take a few minutes to respond to these questions - we need your responses!

Be sure to click the “submit your responses” button at the end of the survey; for any technical difficulties e-mail Needs_Assessment@comcast.net.

Thank you!

INFORMATION ABOUT COURSES OFFERED IN THE GRADUATE TRANSPORTATION MANAGEMENT PROGRAMS

1.	Please tell us which Mineta Transportation Graduate Program you are enrolled in:
	Master of Science in Transportation Management (MSTM)
	Certificate in Transportation Management (CTM)

2.	Is there an appropriate range of courses offered in your program?
	Yes, there is an appropriate range of courses.
	Yes, the courses are generally appropriate but I would like to see more variety.

	No, there is not an appropriate range of courses.
--	---

3.	Which courses or types of courses have been the most valuable? Why?
----	---

4.	Which courses would you like to see offered that are not currently offered? Why?
----	--

5.	The content of the available courses is relevant to my career goals.
	Strongly Agree
	Agree
	Neutral
	Disagree
	Strongly Disagree

6.	If you agreed, how are courses relevant? If you disagreed, how might courses be improved?
----	---

7.	The content of the available courses is relevant to my career goals.
	Strongly Agree
	Agree
	Neutral
	Disagree
	Strongly Disagree

8.	How satisfied are you with videoconferenced classes?
	Very Satisfied
	Satisfied

	Somewhat Satisfied
	Somewhat Dissatisfied
	Not Very Satisfied
	Not Satisfied At All

9.	In which ways were the videoconferenced classes valuable? How might they be improved?
----	--

10.	Some of the Mineta Transportation Management Program courses contain online (Internet-based) instruction and resources. We are interested in your reaction to online instruction. Which of the following statements most closely matches your opinion?
	I think the program should have 100% of its courses available online.
	Yes, the courses are generally appropriate but I would like to see more variety.
	I would not like to see online courses in the Transportation Management Program.
	I have no opinion about the availability of online courses.

11.	If you believe that certain courses should be 100% online, which ones and why?
-----	---

12.	What is your view of having at least a portion of each course available online?
	I think the program should have 100% of its courses available online.
	Yes, the courses are generally appropriate but I would like to see more variety.
	I would not like to see online courses in the Transportation Management Program.

13.	If you believe that certain courses should have some instruction available online, which ones and why?
-----	---

Faculty in the Transportation Management Program

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
14. The quality of instruction I receive in most classes is excellent.					
15. Faculty are generally knowledgeable in their respective fields.					
16. Faculty are fair and unbiased in their treatment of individual students.					
17. Faculty take student differences into consideration as they teach a course.					
18. Faculty are accessible and available by phone and/or e-mail.					
19. Faculty provide valuable feedback and advice.					
20. Faculty are concerned about the success of their students.					

The Program

21.	The content of the available courses is relevant to my career goals.
	Strongly Agree
	Agree
	Neutral
	Disagree
	Strongly Disagree

22.	Adequate research resources and materials are available.
	Strongly Agree
	Agree
	Neutral
	Disagree
	Strongly Disagree

23.	The program is valuable for career professionals.
	Strongly Agree
	Agree
	Neutral
	Disagree
	Strongly Disagree

24.	This program has a good reputation within the community of transportation professionals.
	Strongly Agree
	Agree
	Neutral
	Disagree
	Strongly Disagree

25.	If you required financial aid, were adequate resources available for you?
-----	---

	Yes, adequate resources were available.
	Resources were available but they were not adequate for my needs.
	Resources were not available.
	Not applicable, I did not require financial aid.

26.	So far, how has your experience with the Mineta Transportation Management Program met with your expectations?
	Much better than I expected.
	Quite a bit better than I expected.
	Better than I expected.
	About what I expected.
	Worse than I expected.
	Quite a bit worse than I expected.
	Much worse than I expected.

27.	What is your overall impression of the Mineta Transportation Management Graduate Program?
	The Program is Excellent.
	The Program is Very Good.
	The Program is Good.
	The Program is Fair.
	The Program Needs Some Adjustment.

28.	Which of the following factors were important in your decision to enroll at this institution? (Select all that apply)
	Availability of videoconferenced courses.
	Cost.
	Academic reputation.
	Recommendations from friends/colleagues.
	Geographic location.

29.	The Mineta Transportation Management Graduate Program was my:
	1st choice.
	2nd choice.
	3rd choice.

30.	All in all, if you had to do it over again, would you enroll here?
	Definitely yes.
	Probably yes.
	Probably not.
	Definitely not.

Some General Questions

31.	What is your current enrollment status?
	1st Year.
	2nd Year.
	3rd Year.
	More than 3rd Year.

32.	What is your employment status?
	Full-time transportation related.
	Full-time other.
	Part-time transportation related.
	Part-time other.
	Not employed.

33.	What is your current GPA?
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34.	What is your gender?
	Female
	Male

35.	What is your age?
-----	-------------------

	22-25
	26-29
	30-33
	34-37
	38-41
	42-45
	46-49
	50 and over

36.	What is your ethnicity/race?
	African American
	American Indian or Alaskan Native
	Asian or Pacific Islander
	Caucasian/White
	Hispanic
	Middle Eastern
	Other Asian (Indian, Pakistani, Bangladeshi)
	Prefer not to respond

Last Chance Comments

37.	Thank you for completing this survey! This is your opportunity to add any additional comments regarding the Mineta Transportation Institute's graduate programs, faculty, and/or resources.
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APPENDIX C: ALUMNI FOCUS GROUP QUESTIONNAIRE

Introduction

The Graduate Transportation Management Program is interested in systematically responding to alumni feedback and continuing to develop the program to meet student needs.

Your thoughtful and honest responses to these questions are very important. Your responses will give the program leadership insights into the aspects of your educational experiences that will guide the development of courses and instruction in the future.

We'll start with specific aspects of the program and then move on to your more general experiences, ideas, and perceptions.

Which program did you graduate from? **Masters of Science in Transportation Management (MSTM) or Certificate in Transportation Management (CTM)**

We're interested in your feedback about the courses that are offered in the Graduate Transportation Management Program.

1. Were there an appropriate range of courses offered in the program? If yes, which courses or types of courses were most valuable? If no, which courses would you like to see offered? Why?
2. Were the required courses for the program available?
3. Was the content of the available courses relevant in your present job? If no, why not? If yes, how were they relevant? How might they be improved?
4. Did the content of available courses prove valuable in gaining promotions? If no, why not? If yes, how were they valuable? How might they be improved?
5. Was the content of available courses valuable in terms of structuring your career goals? If no, why not? If yes, how were they valuable? How might they be improved?
6. How satisfied were you with videoconferenced classes? In which ways were they valuable? How might they be improved?

Some of the Graduate Transportation Management Program courses contain online instruction and resources. We are interested in your reaction to online instruction.

7. Did you have experiences with online instruction? If yes, what is your overall view of the online component of the program? If no, do you think that online instruction would have been valuable? Why?

8. Do you think that all courses should have an online component?

9. Do you think that any individual courses should be 100 percent online?

10. How important is the online component in courses? Why?

We're also interested in your feedback about faculty.

11. How would you rate the quality of instruction that you received in most of your classes? Why?

12. Were faculty generally knowledgeable in their respective fields?

13. Were the course requirements usually clear and reasonable? (If no, example?)

14. How accessible were professors? Was this important to you?

15. Overall, did faculty provide valuable feedback about your progress in courses?

16. What about advice from faculty—did you receive advice that was useful in focusing your career goals?

17. Did you receive valuable academic advice from faculty?

18. Did faculty take student backgrounds and differences into consideration as they taught a course? Was this important to you? How?

19. Overall, did faculty meet your needs as students? If yes, how? If no, what types of needs were not met?

20. In which ways can faculty be improved?

We're also interested in the availability of appropriate resources and research materials.

21. Did you find that adequate research materials and resources were available for completing assignments and projects? How could this be improved?

22. What about career decisions—were there adequate services to help you with decisions about your professional career?

23. And as for financial aid, were there adequate resources for those that needed financial aid?

At this point, we have a few general questions about the program itself.

24. Did the program demonstrate concern for the careers of its students? How? Could this area be improved? How?

25. Was the tuition for this program a worthwhile investment?

26. In your experience, does the academic program have a good reputation within the community of transportation professionals? Why?

27. In which ways is this program valuable for career professionals? In which ways could it be improved?

And now for some summary questions:

28. How did your experience with the Graduate Transportation Management Program meet with your expectations?

29. What is your overall experience with the Graduate Transportation Management Program?

30. All in all, if you had to do it over again, would you enroll here?

Please provide any recommendations regarding how the Graduate Transportation Management Program might improve its degree programs:

Please provide any recommendations regarding how the Graduate Transportation Management Program might improve its student services:

Thank you for your participation in this focus group. We appreciate your feedback.

APPENDIX D: ALUMNI INTERVIEW FORM

Alumni Interview Questionnaire:

Your thoughtful and honest responses to these questions are very important. They will guide us in our continuing efforts to provide courses and instruction that will enhance the career opportunities and effectiveness of our graduates. Thank you in advance for your time.

Program (Please Circle):

MSTM Certificate Both

1. Based on your experience, was there an appropriate range of courses offered in the program? If no, Why not? If Yes, how were they relevant and/or how might they be improved?
2. Did the available courses, and content of those courses prove valuable in gaining employment, in your present job, or in securing promotions, depending on your particular situation? If no, why not? If yes, how were they valuable and/or how might they be improved?
3. Was the content of available courses valuable in structuring your career goals? If no, why not? If yes, how?
4. How satisfied were you with videoconferenced classes? How were they valuable and could they be improved?
5. If your classes included online instruction, what is your overall view of the online component?
6. Do you think all courses should have an online component?
7. Do you think that any courses should be 100 percent online? Why?
8. How would you rate the quality of instruction that you received in most of your classes?
9. Were your professors accessible and knowledgeable?

10. Were your course requirements usually clear and reasonable? If no, could you provide an example?

11. Did you receive useful career and academic advice from faculty?

12. Overall, did faculty meet your needs as students?

13. How could faculty improve?

14. Were other appropriate resources and research materials available and adequate?

Just a couple of final points...

15. Did the program demonstrate concern for the diversity of its students, and their career opportunities?

16. Do you feel the tuition and time commitment for the program was a worthwhile investment?

17. In your experience would you say the program has a good reputation within the community of transportation professionals?

18. Overall: Did your experience with the Graduate Transportation Management Program meet with your expectations?

19. Would you recommend this program to others in your field? Why?

Again, thank you for your time.

APPENDIX E: TRANSPORTATION PROFESSIONAL INTERVIEW FORM

Interview:

Company:

Position:

Time:

Date:

Phone Number:

Typical Managerial Career Paths in Transportation

Item: In your organization, where do managers come from and where do they go—what is their typical managerial path?

Need for Additional Education

Item: When prospective managers start on this career path, what proportion of them need additional education or training somewhere during their careers?

Timing and Content of Needed Education /Training

Item: What kinds of education/training are most needed?

Specific Courses Necessary for Success

Item: What kinds of specific courses would be most beneficial—what would you like to see offered to prospective or current managers?

Preference for MS or Certificate?

Item: Does your organization have a preference for master's degrees or a certificate in transportation management? Would you like to see both offered? Why?

Presence of and Satisfaction with In-House Training

Item: Does your organization currently provide the types of training you just indicated? If yes, are you satisfied with the result of this training? How could it be improved?

Level of Priority for Continued Managerial Education

Item: What level of priority does continuing management education or training have in your organization, or organizations like yours? In what ways if any, do you see this priority changing in the future?

Availability of Funds for Continuing Education

Item: Are funds currently budgeted for management education or training? What sort of budgetary approval process is typically required to get funds for training services?

Necessity or Interest in Continued Education through Short Courses

Item: Does a need currently exist, or do you foresee a future need for continuing education through short courses?

For example, weekend intensive and/or courses of less than 10 weeks could be developed to meet the needs of those already holding Master's or Certificates in Transportation Management, and those who just want to augment their skills. Students in either category would have interchangeable curriculum choices and enrollment opportunities.

What types of courses would prove most valuable to your managers specifically, or the industry as a whole?

Item: Does your organization have a need for continuing education of managers through online (web-based) courses?

Future Trends in Organizational Career Paths

Item: Do you think that there should be changes in the education and training for managers so that they can perform effectively in the future?

ENDNOTES

1. A SWOT analysis is a qualitative research method which focuses upon the identification of strengths and weaknesses in a particular program while exploring opportunities for that program in the current market and investigating potential threats from competitors. This method has been modified for the current study so that it identifies strengths and weaknesses in the potential competitor, and then proceeds to use this information to discuss opportunities and identify threats for the SJSU Graduate Transportation Management programs.
2. Total responses add to more than 100 percent as respondents were asked to “select all that apply.”
3. Again, proportions add to more than 100 percent because respondents were asked to select “all that apply.”
4. San Mateo Transit/Caltrain would be considered a satellite training facility for Mineta Transportation Institute courses. Their facilities already have closed-circuit TV and a multi-purpose room capable of handling 70 students comfortably. They have offered to help set-up the program and have a generous “education assistance” program for their employees. Location: less than one block from Caltrain station. Contact: Cindy Strong 650-508-6221.
5. Vincent Kiernan, “A Survey Documents Growth in Distance Education in Late 1990s,” *Chronicle of Higher Education* 49:48 (2003): A28.
6. “Web Based Learning Resources Library,” Weblearning Resources Library, available at <http://www.knowledgeability.biz/weblearning/#An%20Overview%20of%20Web-Based%20Learning>, accessed 15 July 2003.
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11. Carnevale, A36.
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13. Florence Olsen, "Videoconferencing With Some Life to It: The U. of Arizona finds that pricey technology attracts distance-education students," *Chronicle of Higher Education* 49:43 (2003): A24.
14. Ibid.
15. Ibid.
16. Ibid.
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20. Jane Southwell Munro, *Presence at a Distance: The Educator-Learner Relationship in Distance Education*, Research Monograph No. 16. American Center for the Study of Distance Education, 1998.
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ABBREVIATIONS AND ACRONYMS

AACSB	Association to Advance Collegiate Schools of Business
AASHTO	American Association of State Highway and Transportation Officials
CADD	Computer-Aided Design and Drafting
CAIT	Center for Advanced Infrastructure and Transportation
CPM	Critical Path Management
CSU	California State University
CSUS	California State University Sacramento
CTM	Certificate in Transportation Management
CTRE	Center for Transportation Research and Education (Iowa State University)
D5	Caltrans' District 5 which encompasses coastal Central California
DOT	Department of Transportation
EDP	Education Development Plan
FEEDS	Florida Engineering Education Delivery System
IISTPS	International Institute for Surface Transportation Policy Studies (now Mineta Transportation Institute)
ITI	Intermodal Transportation Institute
ITS	Institute of Transportation Studies
GIS	Global Information System
GMAT	Graduate Management Admissions Test

GPA	Grade Point Average
GSU	Georgia State University
GTMP	Graduate Transportation Management Program
JTRP	Joint Transportation Research Program
MBA	Masters in Business Administration
MIT	Massachusetts Institute of Technology
MSTM	Masters of Science in Transportation Management
MTI	Mineta Transportation Institute
NCDOT	North Carolina Department of Transportation
NTI	National Transit Institute
NYSDOT	New York (State) Department of Transportation
NYU	New York University
PERT	Program Evaluation and Review Technique
SJSU	San José State University
STC	Southern Transportation Center
STPP	Surface Transportation Policy Project
TDOT	Tennessee Department of Transportation
TOEFL	Test of English as a Foreign Language
TRAC	Washington State Transportation Center, a cooperative transportation research agency
TRI	Transportation Research Institute
TTI	Texas Transportation Institute
TEA-21	Transportation Equity Act for the 21st Century
UA	University of Arkansas
UAF	University of Arkansas–Fayetteville

UC	University of California
UCD	University of California–Davis
UCI	University of California–Irvine
UConn	University of Connecticut
UD	University of Denver (Colorado)
UFL	University of Florida
UM	University of Maryland
UTC	University Transportation Center
UTK	University of Tennessee–Knoxville
UW at Madison	University of Wisconsin-Madison
UW-Seattle	University of Washington-Seattle
VTA	Valley Transit Authority (Santa Clara County, CA)

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