

Final Report

Perceptions of the Intermodal Transportation Industry Related to Recruitment and Retention of Human Resources

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Executive Summary

A total of four hundred and forty-seven participants responded to a questionnaire designed to assess perceptions of the desirability of careers in the intermodal transportation industry. Data was collected from community colleges and 4-year universities in California, Colorado, Maryland, Michigan, and Texas. The questionnaire was comprised of several classes of variables including: factors that influence career choice; occupational values; preference for a career in transportation; vocational interests; and knowledge and desirability of fourteen other industries.

Results indicate that only 18% of the participants surveyed responded favorably to the question “Would you consider working in the transportation industry?” When asked about familiarity with careers in transportation respondents limited their answers to that of truck driver, airline pilot, ship captain, and train driver. It seems then that limited knowledge is a significant barrier to the recruitment of individuals into the field of transportation.

In an effort to develop tools that will aide the industry, a statistical model was developed to predict interest in transportation careers. The results suggest that persons most interested in pursuing a career in the transportation field are those who have a conventional vocational interest style, an interest in employer benefits programs such as employee assistance and wellness programs, opportunities for career advancement and leadership, travel, a secure and stable career, and knowledge of supportive management. The model accounted for approximately 22% of the variance in interest in transportation careers.

Implications of the results of this survey suggest that respondents who are interested in obtaining a career in the transportation industry place a high importance on opportunities for achievement, as characterized by feelings of accomplishment and the full use of their skills and abilities, competitive fringe benefits (health coverage, tuition reimbursement, and retirement), career stability, security, and a well-defined career path, as well as status in the form of the potential for advancement, leadership, and prestige.

Introduction

Work done by the Transportation Research Board (TRB) and the Western Transportation Advisory Council (WESTAC), has identified the impending human capital shortage in both the operating and managerial ranks of employees in the intermodal transportation industry. This research project attempted to identify, through the use of questionnaire data and focus groups, the main factors that may influence the attractiveness of the intermodal transportation industry as a career option. This research also identifies recommendations that will possibly lead to the implementation of more effective strategies designed to improve perceptions of intermodal transportation career options.

Intermodal Transportation, defined as the utilization of more than two modes of transportation for the movement of goods and people, is a system of transportation that is highly dependent upon the effective performance of individuals. The intermodal transportation system is one that is characterized by a number of different transportation companies and logistics forms that interact to provide a wide array of services. However, a recent special report from the TRB (2003) identified the anticipated shortage in workers and managers that will be available to fill the job vacancies in this industry in the coming five to ten years.

At the present time there is a growing concern regarding the decreasing number of people available to work in the transportation industry. Driver shortages and decreased numbers of individuals available to the ranks of management suggest that the declining numbers of individuals will create significant difficulties for the industry in the next decade. A senate subcommittee estimates that by 2004, 32 percent of the federal work force will be at retirement age and another 21 percent will be eligible to retire - a staggering total of 53 percent or 900,000 employees. Over the past decade, full-time employment at the state departments of transportation, on average, has decreased by 5.3 percent, while department budgets have increased by 56 percent. This trend is expected to continue as more and more staff retire. Furthermore, studies also show that the transportation workforce is declining due to losses to other industries, public desire to streamline agencies such as state DOTs, and declining recruitment of students for transportation careers (Sussman, 1999).

Gallagher (2004) notes that, as the transportation industry reaches peak season and when both domestic and international freight loadings are at an all time high, carriers are faced with labor shortage issues. Specifically, existing manpower is not sufficient enough to meet the needs of companies. In 2003, for example, the major railroads moved nearly 2 million more carloads than in 1999, generating \$3.1 billion more in revenues. This increase was accomplished via the efforts of 23,000 *fewer* workers at the major carriers (Heaster, 2004).

While experts in all modes of transportation have known of the upcoming labor shortages and increased demands to transport more tons of freight, terminal operators and managers have failed to prepare for these shortages by hiring additional employees, securing new

equipment, and improving infrastructure. In fact, as David Arian, president of Local 13: International Longshore and Warehouse Union, states, “it is estimated that in the Las Angeles, California area alone 13,000 plus workers are needed to work at the docks in order to contend with the freight traffic in that area alone” (as quoted in Broder, 2004). In addition to having to contend with problems in the movement of goods, the labor shortage has an impact on transportation security. With the desire to continue moving goods at similar rates, attention to security issues may be compromised because speed over thoroughness in the inspection of cargo is reinforced (Broder, 2004).

Another emerging problem area is the emphasis on career opportunities. One important strategy is to recognize that to attract the talent that is needed in this industry for the future, it is important to begin planting the seeds to cultivate interest in young people much earlier. Information gleaned from Bailey (2002) and from the National Center for Education Statistics (2000) highlights the importance of reaching out to students in community colleges and four-year universities, as well as in high schools, to enlighten these individuals of possible careers in the transportation field. While traditionally most transportation professionals (especially in State Departments of Transportation) have come from civil engineering programs, the educational background of the professionals in the 21st century is changing. As Sussman (1995) notes, there is an impending need to educate the “new transportation professional” in three core curriculum areas, including technology, systems, and institutions. Focus on retention is changing too. Retention is not a new issue, but the increasing mobility of our work force presents a stronger challenge to our retention of qualified workers. Factors that enhance retention range from quality-of-life improvements to a greater commitment to training and development. Despite these concerns little concrete information exists in terms of how to improve the attractiveness of careers in the intermodal transportation industry. There is a definite need for additional information and suggestions on how to improve both the image and the reality of intermodal transportation jobs so as to increase the likelihood that qualified and talented individuals will enter the workforce and persist in their organizations.

In a previous study (Sherry, Szyliowicz, Perl, Jervel., & Diem 2000) conducted for the Asian Pacific Economic Cooperation (APEC), researchers were able to identify that the economic development of the pacific rim countries was tied to the ready availability of well trained personnel who would be available for positions in the transportation industry. In fact, a list of 34 competencies were identified that were related to the successful performance of jobs in the intermodal transportation industry.

The shortage of skilled workers is a pressing issue facing the transportation industry in Canada as well as in the United States of America. Transportation companies will face growing challenges to attract, train, and retain people. Other industries and other jurisdictions face these challenges too, and they will be drawing from the same talent pool that supplies transportation companies with their human resources. To address this issue, WESTAC held two events on the skills shortage. Stakeholders from all sectors of transportation convened to discuss their issues and concerns, and to develop potential solutions to help ensure:

- 1) the future availability of a skilled and qualified workforce for transportation;
- 2) the sustainability of transportation training and education programs.

The WESTAC report indicated that transportation in Canada is having difficulty attracting, training and retaining people: information about transportation is inadequate; transportation has an image problem; too few people are pursuing transportation careers or education; education programs are being cancelled or are surviving on minimal enrollment; there is a gap between education programs and industry needs; jobs are requiring more training and skills; companies have cut back on their training programs; and the skills shortage issues are not being taken seriously enough.

According to the Railway Association of Canada (RAC) there is increasing concern across industries over pending labor shortages. The RAC estimates that 30 to 50% of the rail workforce is eligible to retire over the next 5 to 10 years. Similar shortages are being identified by the U.S. DOT (TRB, 2003). In an effort to address this concern the U.S. Department of Transportation's Garrett A. Morgan Technology and Transportation Futures Program and the department and the TTD have developed transportation projects to promote learning experiences to prepare individuals for careers in transportation. The department and the TTD also plan to develop materials to highlight high paying transportation careers and illustrate, science, computer and other technology necessary to pursue such careers. However, with regard to the intermodal transportation industry specifically, and also with passenger transportation, little is known about the overall future needs and plans to address those needs.

A report published by the Council of Logistics Managers (Carr & Lemay, 1999) highlighted the importance of human resource issues in logistics and the need to understand logistics jobs, career paths, and personal development in terms of job requirements, competencies, and training needs. Researchers, as described in the report, visited over 60 sites in 43 firms and interviewed 632 people. The results underscored the need for continuing emphasis on training and development of managerial personnel with a focus on development as a means of increasing retention.

Conversations with transportation executives in the U.S. and members of the Intermodal Transportation Institute board, at the University of Denver, further highlighted the growing concerns regarding the availability of qualified professionals in the intermodal transportation industry. This study addressed these concerns by assessing the perceptions of the intermodal transportation industry from the point of potential job seekers with respect to the existence of perceived and forecasted shortages, as well as the positive and negative perceptions related to the recruitment and retention of employees.

Methodology

In order to assess perceptions and to make recommendations regarding the intermodal transportation industry, it was important to identify the knowledge base that students in community colleges and 4-year universities have regarding careers in the field of transportation. Students from these two types of educational facilities were chosen as the sample population because they will be entering the labor force in the next few years and because many students are still struggling to identify what type of career they would like to pursue.

Participant Characteristics

A total of 447 surveys were collected from community colleges and 4-year universities in California, Colorado, Maryland, Michigan, and Texas. Of the 447 respondents, 202, or 45.3%, were male and 245, or 54.7%, were female, age ranged from 17 to 62 and average reported years of education was 14.7. Below is a table that presents the demographic information for the questionnaire respondents (please note that answers were not provided to all questions by participants).

Characteristic	N
Gender	
Male	202
Female	245
Race	
White	232
Asian	70
Black	77
American Indian	1
Hispanic	44
Other	23
Age	
20 and below	104
20-29 years	279
30-39 years	41
40-49 years	12
50-59 years	6
60-69 years	1
Educational Level	
1-3 years of College	298
4-6 years of College	128
7+ years of college	14

Procedures

Prior to data collection, written permission to conduct this study was secured from the Institutional Review Board (IRB) at the University of Denver and verbal permission was granted from college representatives for the researcher to be on site.

The researcher would arrive on the campus of the community colleges and the 4-year universities and would report to the common area, typically either the food court or the student lounge. Each student would then be approached and the study would be explained. If the potential respondent had questions, they would be addressed at this time. Once a student gave their consent to participate, they were provided with a copy of the questionnaire (see Appendix A). Upon completion the respondent would be given their choice of an incentive: either a pack of Gum or a \$1 scratch off lottery ticket (both incentives were of equal value).

Measures

The questionnaire assessing perceptions of the intermodal transportation industry related to recruitment and retention of human resources was devised by Philbrick and Sherry (2004: Appendix A) and was comprised of several classes of variables including:

Influencing Factors For Career Choice
Occupational Values
Preference for a Career in Transportation
RIASEC
Knowledge of 14 Career Types
Desirability of 14 Career Types
Demographics

Participants responded to questions assessing knowledge of the industry, occupational values, preferred occupational activities, and preference for a career in transportation using a 5-point likert scale, where 1 = “To a Little or No Degree” and 5 = “To a Very Great Degree”. Knowledge and desirability of career types was rated on a 1 to 14 scale, where 1 = highest ranking for desirability and knowledge and 14 = the lowest.

Initially, students responded to questions assessing the degree to which factors such as career stability, financial reward, travel opportunities, fringe benefits, flexible work schedules, and geographic location of the company were important in influencing their decision to enter a certain career (questions #1-#6).

Questions #7 through #12 assessed the degree to which occupational values, as defined by the Dictionary of Occupational Titles (1991), influenced the decision to enter a certain career as well. These questions documented the influence of achievement, altruism, autonomy, comfort, safety, and status.

The next 5 questions were designed to determine what, if any, incentive would influence a respondent to obtain a career in the field of transportation. The following incentives were assessed: financial assistance to complete your degree and work in transportation; the provision of employee assistance, wellness, and fitness programs; labor/management relations; and opportunities for career advancement and leadership. The last question simply asked if the respondent would consider a career in the transportation industry (the dependent variable in this study).

The RIASEC Model, a vocational interest typology defined by Holland, assessed job preference. Holland's RIASEC Theory is predicated upon the assumption that individuals can be loosely grouped into six personality types and that these types are correlated with likes and dislikes which guide career selection. Because this is a widely used paradigm for understanding career selection, questions assessing "type" were included in this questionnaire so that it could be determined if individuals of a certain type are more likely to endorse items assessing interest in transportation related careers. Specifically, these questions were numbered 18 through 23 and looked at preference for work activities centering on: practical hands-on problems and solutions; ideas, thinking, and problem solving; artistic and creative use of forms, design, and patterns; helping, teaching, providing service, or working with people; leading people, directing projects, making decisions; and predictability, definite procedures, routine, data, details, and organization.

Questions assessing knowledge and desirability of careers related to the industry sectors as defined by the Dictionary of Occupational Titles (1991). These included the 14 occupations listed in the table below:

<i>Industry</i>
Arts, entertainment, & media
Science, math, & engineering
Plants & animals
Law, law enforcement, & public safety
Mechanics, installers, & repairers
Construction, mining, & drilling
Transportation (rail, aviation, shipping, trucking)
Industrial production – manufacturing
Business detail
Sales and marketing
Recreation, travel, & other personal services
Education & social service
General management & support
Medical & health services

Respondents were asked to rate their knowledge of the types of occupations and how desirable they felt obtaining a job in that industry would be. Ratings ranged from 1 (most knowledge/most desirable) to 14 (least knowledge/least desirable). Both knowledge and desirability were assessed because while someone may know a great deal about computers (rating of 1) they may find a career in that industry very undesirable (rating of 14).

Following these ratings, a listing of Fortune 500 transportation companies was provided and participants were asked if they would consider a job in the transportation industry if they could work within their field for a company such as these. Respondents were then asked to rate the degree to which they would work in the field of transportation if they could secure a job starting at 50K a year in this industry.

Lastly, respondents answered demographic questions for descriptive purposes. These questions assessed gender, age, race, number of years of education, and scholastic major.

Results

Several analyses were conducted to determine how the variables included in the questionnaire assessing perceptions of the intermodal transportation industry related to recruitment and retention of human resources were related to whether or not an individual would consider a career in transportation. Listed below are descriptive statistics, correlations between occupational values and interest in working in the transportation industry, correlations between the RIASEC and interest in transportation, and a predictive model of factors related to the choice of transportation as a career, based upon stepwise regression analyses.

To determine what factors were related to an individual considering a career in transportation, a predictive model was used. Specifically, the following variable clusters were entered into the stepwise regression analysis in the order listed: demographics, RIASEC typology, occupational values, and knowledge of 14 industries.

The models developed showed the effect of progressively adding a significant predictor from each of the sets of variables (after determining what was not significant). Only one of the RIASEC variables (Conventional) remained in the equation after all of the other variables were entered. Similarly, only knowledge of management remained, of the 14 industries assessed for knowledge. Of the occupational values assessed, career stability, opportunities for career advancement and leadership, travel opportunities the provision of employee assistance, wellness, and fitness programs; and labor/management relations occur in all of the final models. Thus, when race, gender, and occupational interest areas are controlled for the other factors became significant. Meaning that race, gender, and Holland's career typology (RIASEC – other than Conventional) did not add significantly to the prediction of interest in careers in the transportation industry. The most influential predictor was 'opportunities for career advancement and leadership' in terms of promoting the consideration of a career in the field of transportation. Please refer to the table below for values of significant predictors:

Variable	<i>B</i>	<i>p</i> -value
Employee assistance, wellness, and fitness programs	.142	.037
Labor/management relations	.166	.019
Travel opportunities	.131	.005
Opportunities for career advancement and leadership	.191	.003

Consequently, the model would suggest that persons most interested in pursuing a career in the transportation field are those who have a conventional interest style, have an interest in employer programs, such as employee assistance and wellness programs, where there was possibility of career advancement and opportunities for leadership, travel, a secure and stable career, and knowledge of management and support. The predictive model discussed accounted for approximately 22% of the variance, $R^2 = .222$.

Interesting to note, variables that were not predictive in the model were endorsed by the majority of the respondents, for example 69% of respondents indicated that potential for significant financial gain was important to them in making a career decision to a “considerable or very great degree” (a rating of 4 or 5, respectively on a 5 point likert scale). Likewise, competitive fringe benefits were important to 76% to a “considerable or very great degree”. Thus, these numbers demonstrate that there is a certain level of expected conditions that persons considering entering the workforce are wanting as present and stable aspects of the work environment – namely, financial gain and competitive fringe benefits. The values for which there is some degree of variability then (e.g., opportunities for career advancement and leadership) will enable us to make predictions with a higher level of certainty.

	Mean	Std. Deviation
1. Achievement (feeling of accomplishment & full use of abilities)?	4.3073	.84463
2. Comfort (job security & good working conditions)?	4.2810	.91769
3. Career stability, security, & a well-defined career path?	4.2101	.93380
4. Competitive fringe benefits (health, tuition reimbursement, & retirement)?	4.0884	.99353
5. Status (potential for advancement, leadership, & prestige)?	4.0128	1.05252
6. Safety (supportive management, predictable, stable work environment)?	3.9848	1.04458
7. Potential for significant financial reward?	3.8841	1.04528
8. Altruism (helping others & working in a friendly, non-competitive job)?	3.8706	1.10100
9. Flexible hours/ work schedules?	3.8136	1.03744
10. Autonomy (work on your own, make decisions)?	3.6919	1.09592
11. Geographic location of company?	3.5945	1.10063
12. Opportunities for career advancement & leadership?	3.4289	1.24229
13. Travel opportunities?	3.2677	1.28045
14. Financial assistance to complete your degree & work in transportation?	3.1313	1.29182
15. Employee assistance, wellness, and fitness programs?	3.0684	1.24749
16. Labor/management relations?	3.0302	1.16519

Above is a table that presents the means and standard deviations for questions assessing the importance of job related factors, the degree to which certain factors would influence one's decision to enter a career in the transportation field, and occupational values.

It must be emphasized then that if an individual does not perceive a career choice as having the possibility of providing satisfaction or gratification of the values held by the individual (e.g., achievement, altruism, autonomy, comfort, safety, and status) then there is a considerable likelihood that the individual will not pursue the career in question.

The table below demonstrates that the most important occupational value for the survey respondents was the feeling of comfort (job security and good working conditions) and achievement (feeling of accomplishment and the full use of ones abilities). The least important occupational value was labor management relations, perhaps the result of few survey respondents considering jobs in labor.

	Endorsed to a "Considerable or Very Great"
Comfort	83.3%
Achievement	82.6%
Competitive fringe benefits	76.7%
Status	72.8%
Safety	71.2%
Career stability	68%
Potential for financial reward	68%
Flexible hours	65.5%
Altruism	65.2%
Autonomy	58.3%
Geographic location	55.8%
Opp for Career Advancement	54.6%
Travel opportunities	44.7%
Financial assistance (scholarship)	39.6%
EAP, wellness, and fitness	37.2%
Labor/ Mgmt. relations	34.6%

Respondents were asked to rate, on a scale from 1 (most desirable) to 14 (least desirable) the desirability of the fourteen different industries listed in the Dictionary of Occupational Titles (1991). The graph below shows the frequency and the percent to which each were endorsed.

	Frequency	Valid Percent
Arts	42	12.1
Science	41	11.8
Plants	10	2.9
Law	19	5.5
Mechanical	6	1.7
Construction	14	4.0
Transportation	9	2.6
Industry	7	2.0
Business	16	4.6
Sales	15	4.3
Recreation	14	4.0
Education	45	13.0
Management	16	4.6
Medical	93	26.8

Looking at the frequency and percentages reported it is clear that careers in the Medical, Education, Arts, and Science industries are the most desirable careers for the participants in our sample. Unfortunately, *the transportation industry was rated the third lowest out fourteen and only 2.6% of respondents found this field to be desirable.*

Comparisons were also made between the fourteen career choices, occupational values, and desired benefits (e.g., financial reward, career stability, travel opportunities, etc.). The averages for the most highly endorsed values, by industry, are presented below. Interestingly, of the sixteen possible values, only four received the highest ratings, meaning that regardless of desired industry career, only four values were consistently the highest endorsed (only the most endorsed item for each career is presented).

Arts	Career Stability, security, and a well defined career path	Achievement (feeling of accomplishment & full use of abilities)	Comfort (job security and good working conditions)	Status (potential for advancement, leadership, and prestige)
Arts			4.43	
Science	4.46			
Plants			4.40	
Law	4.53			
Mechanical	5.00			
Construction				4.62
Transportation		4.44		
Industry			4.71	
Business		4.38		
Sales			4.33	
Recreation		4.14		
Education		4.62		
Management		4.31		
Medical		4.33		

For the purpose of this study then, it of interest to review the degree to which values are endorsed by those who report pursuing a career in the transportation industry as desirable. From this information we can learn more about possible recruitment strategies for transportation related careers. Below is a listing of the endorsements, rank ordered (please note that several of the values have equal means), for the 16 values presented in the questionnaire for respondents interested in the transportation field.

Rank Order	Value	Mean
1	Achievement	4.44
1	Fringe Benefits	4.44
2	Career Stability	4.33
2	Status	4.33
3	Career Advancement	4.00
4	Autonomy	3.78
4	Comfort (job security...)	3.78
4	Safety (supportive mgmt...)	3.78
5	Travel Opportunities	3.67
5	Flexible Hours/Work Schedules	3.67
5	EAP, Wellness, and Fitness Programs	3.67
6	Financial Reward	3.44
7	Altruism	3.33
7	Labor/Mgmt. Relations	3.33
8	Scholarships	3.11
9	Location of Company	2.89

For people who desire a career in transportation, the data reveals that achievement, characterized by feelings of accomplishment and the ability to use one's skills and abilities, and the provision of competitive fringe benefits, including health coverage and retirement packages, are equally important and the most highly valued of all. Geographic location of the company and scholarships are the least important. Flexible work schedules were important as well (mean= 3.67) but not as important as it was for most other occupations (e.g., Mechanical: mean = 4.33; Arts: mean = 4.10; and Law: mean = 4.0). Please refer to Appendix B for a full review of the means for the 16 occupational values by industry career.

When asked if respondents would consider working in the transportation industry if they could work in their field of interest, the average response was 2.5, again to a slight degree, however, when asked if they would consider working in this area with a starting salary of \$50,000 respondents indicated that they would consider this to a moderate degree (mean=3.00).

Of the 447 participants surveyed who responded to the question "Would you consider working in the transportation industry", only 18% were interested in transportation to a "considerable or very great degree". While 18% of individuals indicated that they would consider obtaining a job in the field of transportation, it was the 3rd lowest ranked career, of the 14 responded to, in terms of desirability. A mere 2.6% of respondents indicated

that they found a transportation related career to be desirable. This could be due to a lack of industry knowledge of careers in transportation. When asked about familiarity with careers in transportation respondents limited their answers to that of truck driver, airline pilot, ship captain, and train driver. It seems then that limited knowledge is a significant barrier to the recruitment of individuals into the field of transportation.

Discussion

Civil engineering has long been the traditional degree for entrance into the transportation industry. However, over the last several years, enrollment in civil engineering programs has been declining (Meyer & Jacobs, 2000). This, in conjunction with the aging workforce, has made it necessary to look to other professions to provide the human capital needed to keep the transportation industry running safely and effectively. Students from ten different community colleges and 4-year universities, in five states, completed a questionnaire assessing perceptions of the intermodal transportation industry related to recruitment and retention of human resources. Implications of the results of this survey suggest that respondents who are interested in obtaining a career in the transportation industry place a high importance on opportunities for achievement, as characterized by feelings of accomplishment and the full use of their skills and abilities, competitive fringe benefits (health coverage, tuition reimbursement, and retirement), career stability, security, and a well-defined career path, as well as status in the form of the potential for advancement, leadership, and prestige.

In recruiting individuals into the transportation industry, results of this survey suggests that persons who have an interest in conventional jobs and prefer highly ordered activities, both verbal and numerical, with little artistic or physical skills are more likely to consider entering this field. Recruiters should target individuals who do not have a great interest in the geographic location of the company but do have a great desire for career stability. Transportation industry groups (e.g., AAR and IANA) should consider offering potential recruits good benefits packages and opportunities for career advancement and leadership.

As a result of the transportation industry needing professionals representing diverse educational and technical backgrounds, community colleges and 4-year universities seem to provide a positive location for recruiting individuals into the transportation workforce.

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APPENDIX A

Questionnaire for Assessing Perceptions of the intermodal transportation industry related to recruitment and retention of human resources.



This study is designed to identify the main factors that influence career choices.

Using the scale below, please circle the number that best reflects your perceptions:

To what degree are the following important in your decision to enter a specific career?

1	2	3	4	5
Little or No Degree	Slight Degree	Moderate Degree	Considerable Degree	Very Great Degree
1. ... <i>career stability, security, & a well-defined career path?</i>				
2. ... <i>potential for significant financial reward?</i>				
3. ... <i>travel opportunities?</i>				
4. ... <i>competitive fringe benefits (health, tuition reimbursement, & retirement)?</i>				
5. ... <i>geographic location of company?</i>				
6. ... <i>flexible hours/ work schedules?</i>				
7. ... <i>achievement (feeling of accomplishment & full use of abilities)?</i>				
8. ... <i>altruism (helping others & working in a friendly, non-competitive job)?</i>				
9. ... <i>autonomy (work on your own, make decisions)?</i>				
10. ... <i>comfort (job security & good working conditions)?</i>				
11. ... <i>safety (supportive management, predictable, stable work environment)?</i>				
12. ... <i>status (potential for advancement, leadership, & prestige)?</i>				
<i>To what degree would the following lead you to obtain a job in transportation...</i>				
13. ... <i>financial assistance to complete your degree & work in transportation?</i>				
14. ... <i>employee assistance, wellness, and fitness programs?</i>				
15. ... <i>labor/management relations?</i>				
16. ... <i>opportunities for career advancement & leadership?</i>				
17. ... would you consider working in the transportation industry?				
To what degree do you prefer work activities that focus on:				
18. ... <i>practical hands-on problems and solutions?</i>				
19. ... <i>ideas, thinking, and problem solving?</i>				
20. ... <i>artistic and creative use of forms, design, and patterns?</i>				
21. ... <i>helping, teaching, providing service, or working with people?</i>				
22. ... <i>leading people, directing projects, making decisions?</i>				
23. ... <i>predictability, definite procedures, routine, data, details, & organization?</i>				

Please rank order the following **fourteen industries** from 1 to 14 (1 being the highest ranking and 14 being the lowest) in terms of your **KNOWLEDGE** of what careers in these industries entail and how **DESIREABLE** you feel they are (e.g., the industry you would most like to work in would be ranked 1 just as the industry you know the most about would be a 1). Please use all 14 ratings (1,2,3,4,5,6,7...).

<i>Industry</i>	Knowledge (1to 14)	Desirability (1 to 14)
Arts, entertainment, & media		
Science, math, & engineering		
Plants & animals		
Law, law enforcement, & public safety		
Mechanics, installers, & repairers		
Construction, mining, & drilling		
Transportation (rail, aviation, shipping, trucking)		
Industrial production – manufacturing		
Business detail		
Sales and marketing		
Recreation, travel, & other personal services		
Education & social service		
General management & support		
Medical & health services		

There are a number of different types of transportation companies. All of them have a wide range of departments and activities. Here are a few of the Fortune 500 companies, all of which posted a significant profit in the last fiscal year:

• Union Pacific Railroad	• United Airlines
• Federal Express	• Frontier Airlines
• UPS (small package)	• American Presidents Shipping
• Yellow Freight (Trucking)	• Amtrak

Given your major, and assuming you could work in your field in a company such as those listed above, how likely is it that you would work in the transportation industry?

Please rate from 1 (little or no degree) to 5 (very great degree): _____

If you could have a job, starting at 50K in your field of specialization, how likely is it that you would work in the transportation industry?

Please rate from 1 (little or no degree) to 5 (very great degree): _____

Demographic Questions (please answer)

Gender: _____

Age: _____

Race: _____

Number of Years of Education: _____ (e.g., HS = 12 years)

Scholastic Major: _____

APPENDIX B

Means for Occupational Values by Desirability of Industry Career

Career	Value #1	Value #2	Value #3	Value #4	Value #5	Value #6	Value #7	Value #8	Value #9	Value #10	Value #11	Value #12	Value#13	Value#14	Value#15	Value#16
Arts	4.167	3.9762	3.4762	4.2143	3.5238	4.0952	4.2857	3.8810	3.6667	4.4286	3.9524	4.2381	3.1905	3.3095	3.5238	3.7317
Science	4.4634	4.2683	2.8537	3.9024	3.7073	3.4878	4.2683	3.7317	3.5366	4.4146	4.1220	3.7073	2.8537	2.5122	2.5122	2.8049
Plants	4.2000	3.8000	3.4000	4.1000	3.8000	3.8000	4.1000	3.4000	3.7000	4.4000	3.9000	3.8000	3.1000	2.6667	2.9000	3.3000
Law	4.5263	4.1579	3.4211	4.1053	3.6316	4.0000	4.1579	3.3158	3.4211	4.4211	3.6111	4.5263	3.0000	2.5263	2.5263	3.5789
Mechanical	5.0000	4.1667	3.1667	4.5000	4.5000	4.3333	4.6667	3.8333	4.5000	4.5000	3.6667	4.6667	3.5000	4.3333	3.6667	4.3333
Construction	4.2308	3.7143	3.6154	4.1429	3.4286	4.0000	4.0714	3.7857	3.9286	4.2143	4.3571	4.6154	2.9286	2.7143	2.8571	3.2143
Transportation	4.3333	3.4444	3.6667	4.4444	2.8889	3.6667	4.4444	3.3333	3.7778	3.7778	3.7778	4.3333	3.1111	3.6667	3.3333	4.0000
Industry	4.4286	3.7143	2.7143	4.4286	4.1429	3.7143	4.5714	4.1429	4.0000	4.7143	4.4286	4.5000	3.1429	3.4286	3.2857	3.6667
Business	3.9375	4.0000	3.4375	4.2500	3.6250	3.8750	4.3750	3.6250	3.6250	4.1250	4.1875	3.8125	3.1250	3.0000	3.4375	3.4375
Sales	4.0667	3.9333	3.4000	3.8667	3.2667	4.0000	4.2667	3.8667	3.6667	4.3333	4.2667	4.0667	3.0667	3.0667	3.3333	3.3333
Recreation	3.4286	3.1429	3.2857	3.4286	3.6429	3.7143	4.1429	3.6429	3.4286	3.7143	3.5000	3.6429	3.0714	3.3571	3.2857	3.7857
Education	4.1111	3.3333	2.8889	4.0667	3.7333	3.6000	4.6222	4.1111	3.6444	4.1778	4.0889	3.5909	3.2444	3.0889	3.1333	3.2444
Management	4.1875	3.8750	3.3125	3.8750	3.0000	3.3750	4.3125	3.4286	3.8125	4.1875	3.8750	3.9375	3.0000	2.8125	2.7500	3.1875
Medical	4.2688	4.0538	3.1613	4.2174	3.6344	3.8817	4.3333	4.1304	3.6129	4.3261	4.0323	4.0787	3.0860	3.0108	2.7957	3.4239
Total	4.2254	3.8876	3.2052	4.1012	3.5994	3.8069	4.3343	3.8605	3.6513	4.2890	4.0116	4.0147	3.0865	3.0058	2.9942	3.3953
SD	.93315	1.04053	1.28360	1.00067	1.12167	1.03139	.83150	1.11614	1.12101	.93731	1.04944	1.06835	1.30960	1.25800	1.16796	1.28257

Please refer below for a full description of the values:

- Value #1: Career stability, security, & a well-defined career path
- Value #2: Potential for significant financial reward
- Value #3: Travel opportunities
- Value #4: Competitive fringe benefits (health, tuition reimbursement, & retirement)
- Value #5: Location of company
- Value #6: Flexible hours/ work schedules
- Value #7: Achievement: feeling of accomplishment & full use of abilities
- Value #8: Altruism: helping others & working in a friendly, non-competitive job
- Value #9: Autonomy: work on your own, make decisions
- Value #10: Comfort: job security & good working conditions
- Value #11: Safety: supportive management, predictable, stable work environment)
- Value #12: Status: potential for advancement and leadership
- Value #13: Financial assistance to complete your degree & work in transportation
- Value #14: Employee assistance, wellness, and fitness programs
- Value #15: Labor/management relations
- Value #16: Opportunities for career advancement & leadership