

High School Students on Track for Transportation Careers — The Mineta Summer Transportation Institute of San José State University

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Irma Garcia

Introduction

New and emerging technologies are driving rapid change in the field of transportation. While these new technologies have given rise to a wide range of employment opportunities, there continues to be a widening gap in the transportation workforce. New and existing areas of transportation continue to struggle to attract, retain, and advance the employees needed to keep up with the transportation needs of the nation. Additionally, nearly half of the workforce employed in transportation-related jobs either are or will be eligible for retirement in the next decade (Woodend Jones). While struggling to replace retirees at an efficient pace, the transportation industry is also working to overcome gender and racial barriers that limit the industry's growth and impact its [9.4 percent](#) contribution to the nation's gross domestic product (Bureau of Transportation Statistics).

As the leader of both the [California State University Transportation Consortium](#) (CSUTC) and the [Mineta Consortium for Transportation Mobility](#) (MCTM), the [Mineta Transportation Institute](#) (MTI) of [San Jose State University](#) (SJSU) is dedicated to fostering the next generation of transportation professionals and skilled workers. To engage Bay Area high school students in transportation-focused careers, for over 15 years MTI has partnered with the [United States Department of Transportation](#) (USDOT) and the [California Department of Transportation](#) (Caltrans) to serve as a host site for one of the National Summer Transportation Institute (NSTI) Programs.

With the goal of addressing future transportation workforce needs, this transportation-focused career awareness initiative is designed to introduce financially disadvantaged secondary school students to all modes of transportation-related careers, provide academic enhancement activities, and encourage students to pursue transportation-related courses of study at the college/university level (Caltrans). To meet this goal, the program was designed to meet these three objectives:

1. Recruit 35-40 high-school students from diverse ethnic backgrounds to participate in the program;
2. Expose participating students to a variety of academic and practical experiences in the transportation field in the Bay Area;
3. Provide participating students with a variety of science, technology, and employment skills.

As one of four competitively selected California host sites, the [Mineta Summer Transportation Institute](#) (MSTI) offers a free, in-person (non-residential), three-week curriculum where 35 students ages 14-18 earn college credit in an accelerated three-unit [Introduction to Environmental Studies](#)

(ENVS) course. The course covers the human impact on the environment and satisfies Area D1 (Human Behavior) of the California State University and University of California General Education requirements.

In addition to the ENVS course, students receive a behind-the-scenes look at the inner workings of the transportation industry through a series of field trips to public and private agencies, interactions with guest speakers, and hands-on activities led by transportation professionals and university professors. The students experience college life as commuter students, having to chart their own way to and from campus using a personal (parent) vehicle, public transit, and/or active modes. The participants also have access to student resources and campus facilities like the Martin Luther King Jr. Library, SJSU Career Center, SJSU Writing Center, and eateries in and around the campus.

According to exit surveys, students who complete the program come away with a better understanding of the relationship between transportation and the environment, climate change, higher education, and transportation careers. In fact, in 2019 69% of the MSTI students indicated an increased interest in transportation careers.

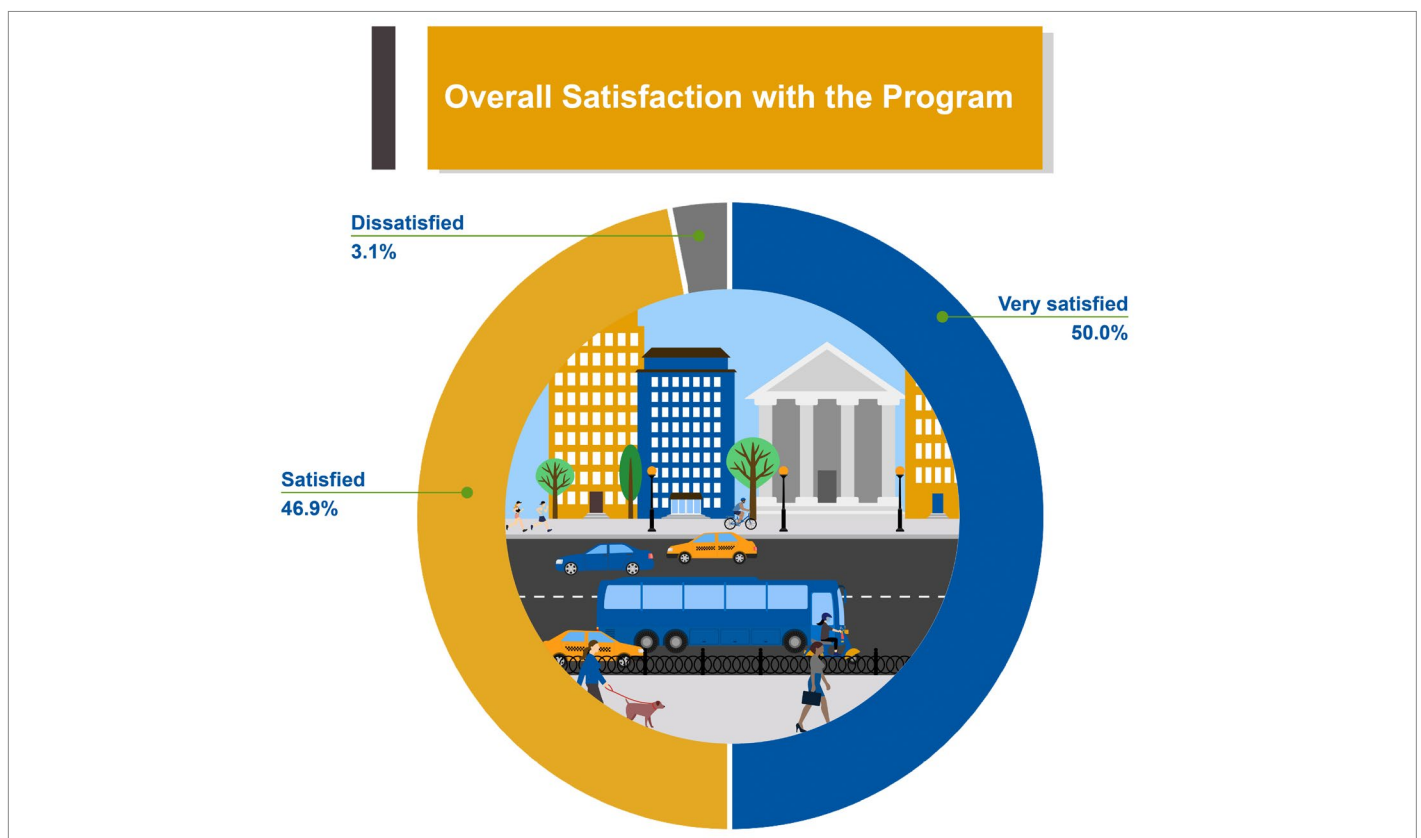


Figure 1. Overall MSTM Student Satisfaction (2019)

Historical Background

In 2002, MSTI hosted its inaugural class with just 18 students, of which 84% represented minorities. These students engaged in a variety of activities, including field trips, guest speakers, projects and other

hands-on enrichment. The exit survey results from this first group provided MTI with the groundwork to improve and grow the program, identifying the challenges the students encountered and how the program could better encourage the students to take a greater interest in the transportation industry.

For instance, when given a four-point scale through which to measure the program outcomes, where 1 is the lowest possible score and 4 the highest, the students indicated an average score of 3 to their satisfaction with program speakers, staff, and activities. When given the opportunity to offer further feedback, several students positively noted the program exposed them to new career options.

For example, one subject indicated that “Participating in the STI program was a great experience because I didn’t think that there were so many different jobs in transportation. I really learned a lot in this program because of the speakers and field trips we went on.”

Another commented, “Coming to STI was fun. I learned about new careers involving transportation. I got to see how some transportation groups work, and what they do. The most interesting thing was that all the people that we met and talked about their transportation careers were happy with what they were doing.”

In the years that followed, MSTI grew in participant size, program duration, and curriculum. In 2019 the 32 enrolled students were made up of 81% diverse (non-white) individuals. Additionally, 31% of students also indicated that they qualified for free or reduced lunch at their school, indicating a low income household.

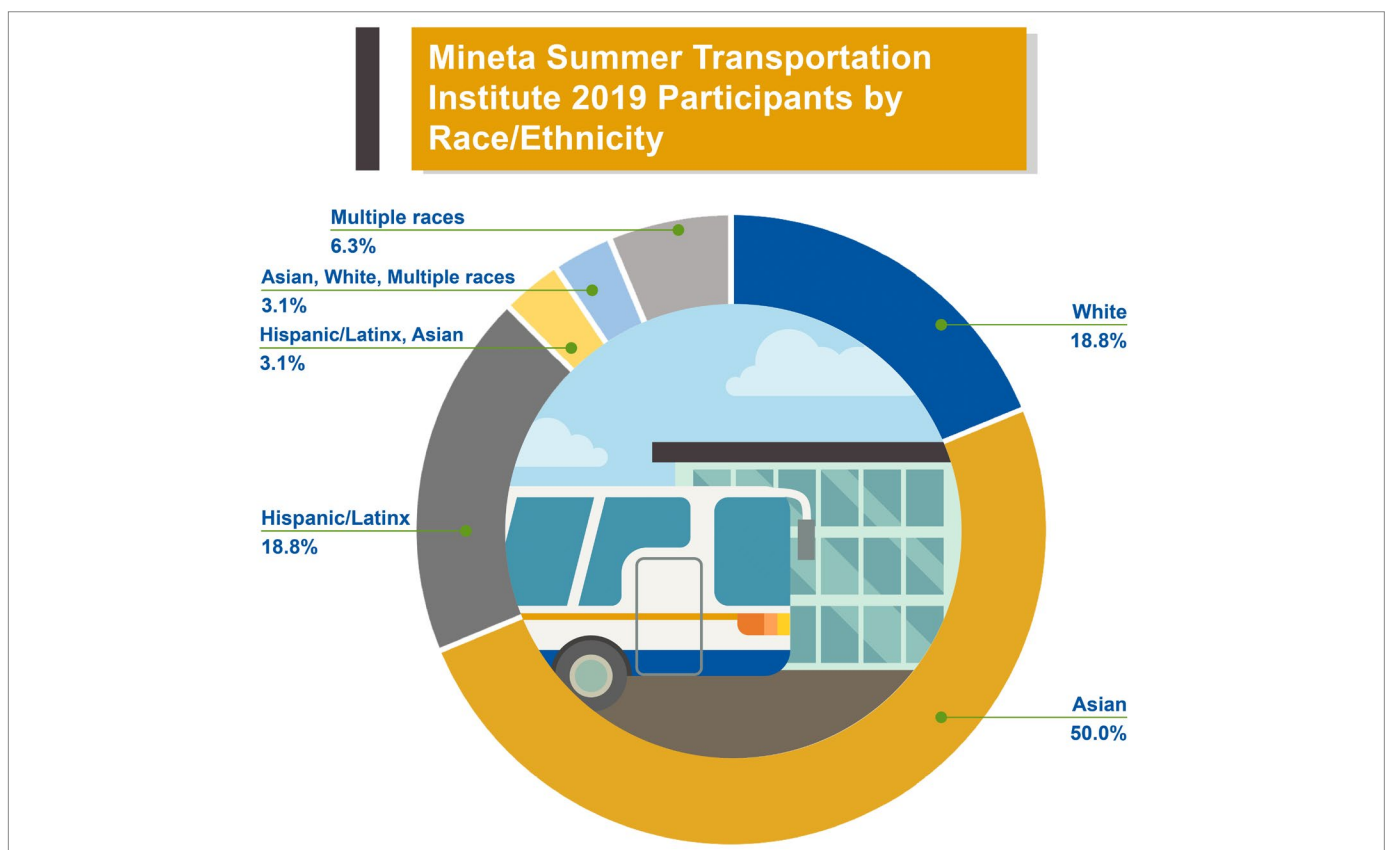


Figure 2. MSTI Race/Ethnicity Demographics (2019)

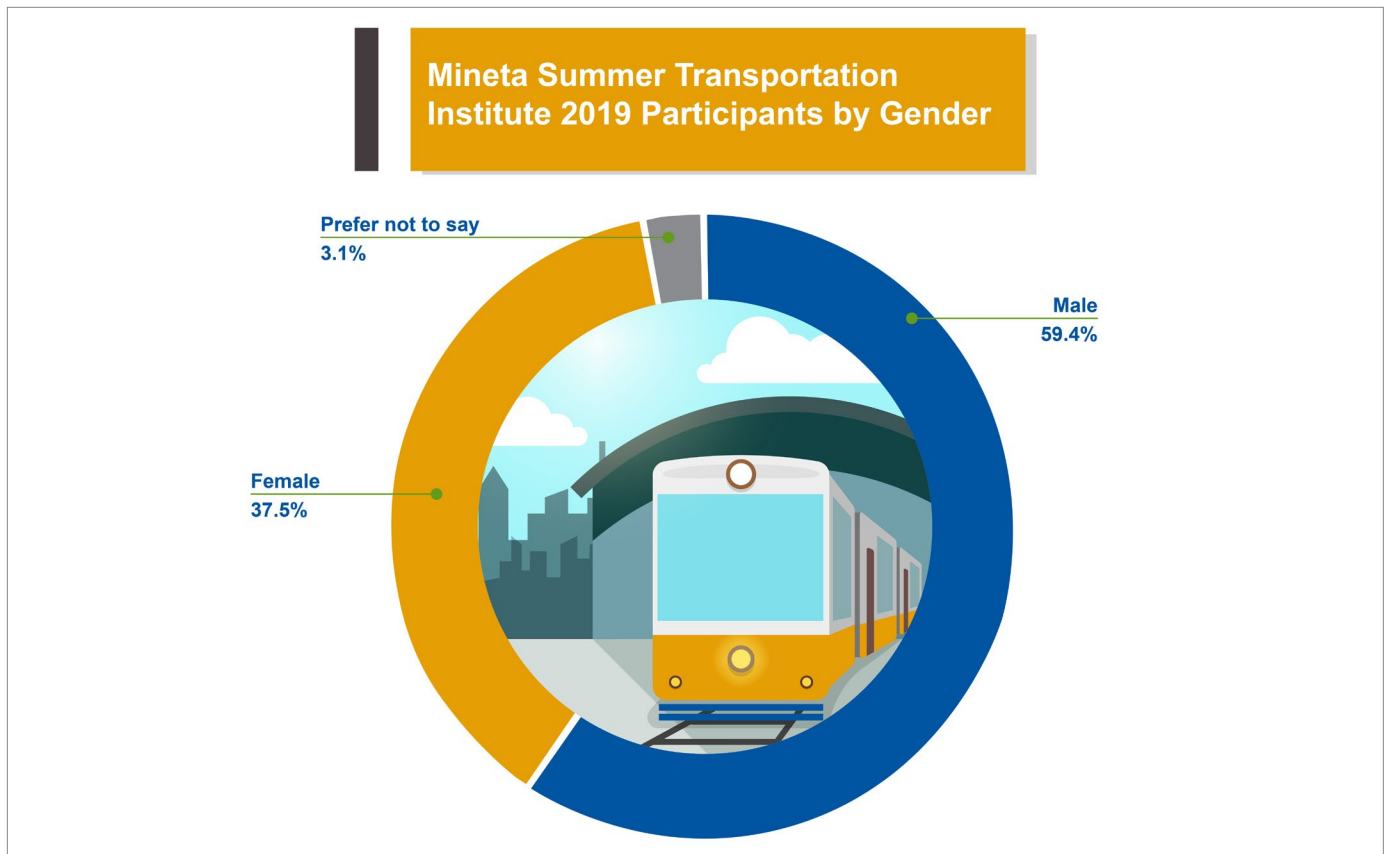


Figure 3. MSTI Gender Demographics (2019)

The program duration also grew from two weeks to four before later settling on three to accommodate the addition of a college course in 2006 that would earn high school students college credit.

Environmental Studies Course

The MSTI program has significantly evolved since it was first offered in 2002. The many changes include increasing the number of student participants from 18 in 2002 to 32 in 2019 as well as adding program leads and chaperones to accommodate the increased number of minors. Additionally, the program offers a greater variety of field trips, competitions, and hands-on activities, resulting in an increased cost for the higher level of practical engagement.

Despite the many upgrades, MSTI has continued to see the value of offering the three-unit ENVS course free of charge to the students. Without MSTI's financial support, the course, which is offered through SJSU's [Summer Session](#), would cost \$450 per student.

The course is taught by an SJSU professor from the Environmental Studies Department in the same way that a semester class would be, consisting of presentations, discussions, term papers, and exams. The course's overall objective is "to offer students the opportunity to gain an understanding of the causes and cures for many of our environmental issues. Our world and its living populations are compromised by an expanding human population, poverty, increasing disparity between the

well fed and the starving, between the rich and poor, conversion of non-renewable resources into municipal solid waste and pollution, political manipulation of the public for corporate benefit, the abuse of public and natural resources, and the dangers of toxic emissions imposed onto the environment and into ourselves.”

The subjects covered in the curriculum include but are not limited to:

- Environmental worldviews and history, which explore how other nations interpret and manage environmental changes;
- Scientific principles of matter, energy and ecosystems;
- Land use and city planning;
- Sustainability and agriculture;
- Deforestation and air pollution;
- Water and waste management; and
- Climate change and air pollution.

While the three-week program meets Monday through Friday from 9a.m. to 3p.m., the ENVS class meeting times vary to accommodate the out of class activities, like field trips and guest speakers, without taking away from the lessons. During the planning stages of the program, the course professor and MSTI program lead identify and develop a schedule to ensure the students’ success in the course as well as ample time to partake in the transportation career exploration activities.

**SUMMER 2019 ENVIRONMENTAL STUDIES 001
MINETA TRANSPORTATION INSTITUTE (MTI) SCHEDULE**

- 1) **PLEASE NOTE:** We discuss current environmental issues that are in the news. This may cause schedule changes.
 2) **YOU MUST ATTEND CLASS DAILY TO STAY AWARE OF THE COURSE SCHEDULE!**
 3) Narrated lectures are also available on line. A separate sheet lists them.

Class #	Day	Date	Topic	Readings/Study Assignments
1.	MONDAY	6/10	<ul style="list-style-type: none"> Welcome to EnvS001, What is Env. Studies? How to do well in the course: your Professor. Discussion of News Analysis Assignment 	Introductions, Course Description, Greensheet, Schedule, Grading Form, Glossary, Learning Skills, News Analysis, p. S4, S6.
2.	TUESDAY	6/11	<ul style="list-style-type: none"> Overview of Issues, Env. Careers 	Preface, Chp.1, Index
3.			<ul style="list-style-type: none"> Environmental History Environmental Worldviews 	p. S.31 (S5), Chp. 25.
4.			<ul style="list-style-type: none"> Scientific Principles: Matter, Energy, and Ecosystems T.Env. Perspective/Critical Thinking 	Chps.2, 3 (4, 5 & 7 review). Pay particular attention in class to know what to focus on.
5.			<ul style="list-style-type: none"> Human Population Dynamics 	Chp. 6
6.	WEDNESDAY	6/12	<ul style="list-style-type: none"> Sustainable Cities: Urban Land Use (if time) 	Chp. 22
7.			<ul style="list-style-type: none"> Food Resources and Poverty 	Chp. 12
8.			<ul style="list-style-type: none"> Food and Poverty, Pest Management 	Chp. 12
9.			<ul style="list-style-type: none"> Soils/Tragedy of the Commons 	Chp. 12
10.	WEDNESDAY	6/12	<ul style="list-style-type: none"> Forests 	Chp. 10
11.			<ul style="list-style-type: none"> Public Lands; Environmental History, Politics, and Ethics, Wilderness 	Chp. 10
12.			<ul style="list-style-type: none"> Biodiversity Pay particular attention in class to know what material in the book to focus on. 	Chp. 4, 5, 8-11
13.			<ul style="list-style-type: none"> Midterm Review 	
14.	THURSDAY	6/13	<ul style="list-style-type: none"> Discussion of News Analysis 	
15.			<ul style="list-style-type: none"> MIDTERM #1 (Classes 1-9) 	
16.	WEDNESDAY	6/19	<ul style="list-style-type: none"> NEWS ANALYSIS (in-class discussion) Water Resources Water Pollution 	<u>News Analysis Due</u> Chp. 13 Chp. 20
17.	FRIDAY	6/21	<ul style="list-style-type: none"> Energy Principals: Non-Renewables 	Chp. 15, p. 59 (S 10)
18.			<ul style="list-style-type: none"> Energy Principals: Efficiency/ Renewables 	Chap. 16
19.			<ul style="list-style-type: none"> Midterm Review: Classes 10-16 	
20.			<ul style="list-style-type: none"> Essay Assignment: Discussion 	
21.	TUESDAY	6/25	<ul style="list-style-type: none"> MIDTERM #2 (classes 10-16) 	MIDTERM #2
22.			<ul style="list-style-type: none"> Air Pollution and Acid Rain 	Chp. 18
23.			<ul style="list-style-type: none"> Climate Change and Ozone Depletion 	Chp. 19
24.			<ul style="list-style-type: none"> Solid Waste Management and Non-renewable Minerals Discussion 	Chp. 14 and 21
25.	TUESDAY.	6/25	<ul style="list-style-type: none"> Politics, Environment and Society 	Chap. 23 and 24
26.			<ul style="list-style-type: none"> Exam Review/Catch up lectures/Essay Review 	
27.	WEDNESDAY	6/26	<ul style="list-style-type: none"> HENRY COWELL STATE PARK Guest speaker: Dr. William Russel 	
28.	THURSDAY	6/27	<ul style="list-style-type: none"> ESSAY DUE—discuss papers 	ESSAY DUE
29.			<ul style="list-style-type: none"> MIDTERM 3/FINAL (classes 17-end and material from exams 1 and 2) 	

Figure 4. 2019 Syllabus Calendar for ENVS 001 Course Taught by Dr. Bruce Olszewski

Partnerships and Guest Speakers

The success of the MSTI program is due largely in part to the unique experiences and exposure to transportation-related careers that the students receive. In addition to partnering with the Environmental Studies Department to offer the introductory course, the MSTI program partners with other colleges and departments on the SJSU campus, such as the [College of Engineering](#), the [Department of Aviation and Technology](#), and the [Department of Urban and Regional Planning](#).

For instance, from 2017-2019 the MSTI students were invited to the College of Engineering to participate in two or three days of mostly hands-on engineering activities led by volunteers from the college and [SEMI Foundation's High-Tech U](#) staff. The SEMI (Semiconductor Manufacturing Trade Association) Foundation is the educational and philanthropic division for SEMI based out of Milpitas, CA. To discover and test potential careers, MSTI students completed a coding crash course, explored basic physics topics related to motion, and employed their statistics skills. The students had the added opportunity to listen to guest speakers—like CEOs from [Micron Technology](#) and representatives from [Applied Materials](#)—who sponsor the materials used in the students' hands-on activities. Their activities culminated in career talks, resume workshops, and mock interviews, and in 2017 three students were awarded scholarships amounting to \$2000.

As the only California State University (CSU) that offers aviation as a major, MTI felt it critical to take full advantage of the Gerald Shreves Flight Simulation Lab on the SJSU campus. During the MSTI's visit to the [Gerald Shreves Flight Simulation Lab](#), the students broke off into groups of three to maximize their time in a lab intended to train future pilots and flight crews. The first group of students learned the basic principles of flight (lift, drag, thrust, and weight) by building model plane wings and testing their models in a wind turbine machine. The second group of students applied their geographical skills to assess mystery terrains using coordinates and aeronautical maps to simulate ground control's communication with pilots in the skies. Meanwhile, the third group of students took on the roles of pilots and co-pilots in flight simulators to practice take-offs and landings using equipment similar to those found on small passenger aircrafts.



Figure 5. MSTM Student Working with SJSU Aviation Student on Aerial Mapping

In 2019, Sonja Kos, AICP, of the Department of Urban and Regional Planning and formerly with the City and County of San Francisco, served as a guest speaker for the MSTI students. Her discussion augmented the students' ENVIS lessons around city planning, race, and equity. Mrs. Kos shared her unique insights into historical racial inequities that have had lasting effects on city planning. Additionally, she offered a first hand account of the challenges persons with disabilities often face in an urban environment.

While on the SJSU campus, students are also encouraged to explore other departments and student success centers to consider disciplines that interest them. These and other campus resources are covered during an SJSU campus tour that details the experiences of college students and offers a historical overview of California's oldest university.

To further encourage students to consider transportation careers, MSTI partners with public and private agencies that contribute to the transportation industry. These critical touch points offer

students a look into the many roles that are required to move people and goods. To ensure this information is delivered in an engaging and enriching format, each agency prepares its own unique method of presenting to the students. Through tours, hands-on projects, career talks, and/or demonstrations, the students gain a deeper understanding of the opportunities afforded to them through a career in transportation.

Table 1. All MSTI Partnerships (2002-2019) and Activities Conducted

Partner/Agency	Location	Tour	Guest Speaker(s)	Hands-On Activities
Applied Materials & SEMI Foundation	San José State University		x	x
BART Warm Springs Fremont Extension	Fremont, CA	x	x	
California State Railroad Museum	Sacramento, CA	x	x	
City of San José Traffic Control Center	San José, CA	x	x	
Club Auto Sport	San José, CA	x	x	x
Diridon Station	San José, CA	x	x	
Gerald Shreve Flight Simulation Lab (SJSU)	San José State University	x	x	x
Golden Gate Ferry	San Francisco, CA	x	x	
Google	Sunnyvale, CA	x	x	x
Henry Cowell State Park	Felton, CA	x	x	x
Hiller Aviation Museum	San Carlos, CA	x	x	
Micron Technologies & SEMI Foundation	San José State University		x	x
Mineta San José International Airport	San José, CA	x	x	
Moffett Federal Airfield	Mountain View, CA	x	x	
NASA	Mountain View, CA	x	x	x
NUMMI/ Tesla	Fremont, CA	x	x	
Port of Oakland	Oakland, CA	x	x	
Prospect Silicon Valley	San José, CA	x	x	x
Reid Hillview Airport	San José, CA	x	x	
Sam Trans	San Francisco, CA	x	x	
San Francisco Maritime Museum	San Francisco, CA	x	x	
San José City Hall	San José, CA	x	x	
San Francisco- Oakland Bridge	San Francisco, CA	x	x	
Santa Clara Valley Transportation Authority	San José, CA	x	x	
Tech Museum of Innovation	San José, CA	x	x	x
USS Hornet	Alameda, CA	x	x	

The following are summaries of students' experiences at some of the agencies listed above.

At History Park in San José, the students gained a historical perspective and saw first-hand just how far transportation has come in the last century. After a brief self-guided tour of the historical buildings preserved at this park, the students visited the [Trolley Barn](#), which houses the many locomotives that once rumbled through Santa Clara County and beyond, and then continued for a guided tour by a retired conductor and locomotive mechanic. The tour completed with a ride through the park line on one of the restored trolleys. When juxtaposed with a tour of [Diridon Station](#) in San José and [Santa Clara Valley Transportation Authority](#) (VTA), students gained a deep understanding of how transportation continues to evolve.



Figure 6. 2018 MSTM Students and Program Leads at VTA Graduation Ceremony

[Google](#) welcomed MSTI students to their Sunnyvale Campus where they had the opportunity to tour their facilities and hear from guest speakers about global and local collaboration projects. The students showed keen interest in bike share programs, Waymo's autonomous vehicle launching, underwater internet cabling installation, and other cutting edge technologies that demonstrate Google's commitment to reducing their carbon footprint.

Students who joined the program in 2017-2019 were invited to view "Dream Big: Engineering Your Future" at [The Tech Museum's](#) IMAX Theater. The film demonstrated the humanitarian impact

that engineering can have on entire populations. In addition to the film, students spent half of their MSTI day exploring the museum's many exhibits and partaking in some of their hands-on science experiments/demonstrations, including coding, game development, a simulated jet chair ride, earthquake simulator and more.

When visiting the [Mineta San Jose International Airport](#), students received a career and job talk from plane mechanics, flight attendants, pilots, TSA agents, and took a tour of the luggage sorting machinery before stepping onto the tarmac as planes pulled in to refuel.

At each of these locations, students are encouraged to ask questions, test out approved equipment, and propose ideas for areas of improvement (i.e. ridership, youth engagement, etc.).

Recruitment

In an effort to cultivate a diverse student population for the MSTI program, MTI is involved in several in-person and online recruitment opportunities. MSTI begins recruiting from local [Title 1](#) public schools using a curated list of STEM contacts from the two districts in the SJSU area—San José Unified School District (SJUSD) and East Side Union High School District (ESUHSD)—followed by other schools in the [Santa Clara County](#) area.

As part of the program, MTI hires a program coordinator to aid in the recruitment and summer program as a whole. This individual is a high school teacher with a STEM background and interest in the subjects covered in MSTI. Their direct classroom connection to students who might already show an interest in MSTI topics allows them to aid in recruitment efforts.

Because of MTI's involvement in workforce development activities year-round, there are ample opportunities for engagement that double as recruitment opportunities. In the past events such as those that follow have allowed for in-person tabling events or classroom discussions to recruit students into the MSTI program:

- College career fairs
- Science fairs
- Guest speaking opportunities
- Youth conferences
- Summer camp fairs
- School assemblies

At these in-person events often called “tabling,” students are encouraged to ask questions about the benefits of the program, university life, career exploration, program costs, etc. It is immediately following these in-person recruitment events that there is a spike in program registrations.

The online registration form, which collects information on the student in order to screen for those most interested in what MSTI has to offer, is the first step in being accepted into the program. This form not only serves to streamline the application and admission process, but also ensures that the program is adhering to two of its major goals: recruiting a diverse student population and making the program available to low-income students.

Along with contact information for the student and a parent/guardian, the form asks for the following information:

- What high school do you currently attend?
- What is your current grade level?
- Are you enrolled in an academy or career pathway program? If so, which one?
- Have you completed Algebra/Math 1?
- What math are you currently taking?
- List your most recent science course(s).
- Have you taken any advanced placement (AP) courses? If so, which ones?
- What career interests or college major would you like to pursue?
- Do you have a computer with internet access to complete your assignments?
- Do you have transportation to and from San José State University?
- Do you have any allergies or disabilities that you'd like the instructor/program director to be aware of?
- Can you walk comfortably for 30 minutes?
- Do you qualify for free or reduced lunch at your school?
- Will you or your siblings be the first in your immediate family to enroll in college or university?
- Are you able to attend the entire 3 week course?
- Provide the name and email address of a teacher, counselor, coach, administrator, etc. who will provide a recommendation for you to participate in this program.
- In 250 words or less, write an essay on how this institute and the 3 units of Environmental Studies credit from SJSU will help you with your career or college goals and why you would like to participate. Include extracurriculars, awards, or volunteering activities that are relevant.

- How would you rate your current interest in transportation as a field of study or career? (scale of 1 (lowest) through 5 (highest) provided.)

In addition to these questions, students were asked about interest regarding a supplemental program in partnership with the National Flight Academy in Pensacola, Florida.

Completing the Program

In order to complete the program and earn the three university credits, MSTI students must pass the Environmental Studies course with a 74% (letter grade of C) or better. The students must also not have more than two unexcused absences from the class, this includes being asked to leave due to behavioral issues or classroom disruptions.

The students who complete the program receive a certificate of completion and have the three units added to their official college transcript, which can be retrieved at any time using the SJSU registrar portal. Transcripts can be sent to other CSU or UC institutions, and students can also petition their individual school administration to have the units serve as additional credits in high school. While this latter opportunity is not available at every high school, MTI works with individual students and their school administration to provide any available documentation for the petition.

Upon completing the program, the students are recognized during a certificate awarding ceremony hosted at VTA headquarters. Students' families are invited to attend and enjoy lunch as well as view a recap of the MSTI activities. During this award ceremony, MTI also recognizes the accomplishments of the "most successful students" in the class with a plaque for their exceptional efforts and participation in the program.

National Flight Academy



Figure 7. Two 2018 MSTM Students at the National Naval Aviation Museum in Pensacola, FL.

In both 2018 and 2019, MTI secured additional funding that would allow a dozen students from the MSTI program an additional scholarship to attend the National Flight Academy (NFA) in Pensacola, Florida. This fully immersive program welcomes students from across the U.S. aboard the world's largest simulated aircraft carrier to further inspire STEM interest in 7-12th graders.

After a full day of air travel—a first time experience for several MSTI students—they spent 6 days in a 102,000 square foot facility experiencing theme-park style thrills surrounded by advanced technology, flight simulators, and virtual reality games that ignite imagination and encourage learning. This once in a lifetime experience further engaged students in transportation careers as well as opportunities available to them by serving in one of the military branches.

While the simulated missions for the MSTI students are all of humanitarian nature, the “heart-pumping, adrenaline-filled mission includes squadrons competing to successfully finish a task. Whether it is a race or rescue, science, technology, engineering, and math (STEM) skills are used in tandem with the equally important 21st Century learning skills including critical thinking, problem-solving, teamwork and communication to advance the team” (National Flight Academy). Additionally, during their stay MSTI students had the opportunity to work with a diverse group of their peers from different backgrounds and sometimes entirely different personal experiences.

In order to be selected to attend NFA, the students had to have demonstrated a keen interest in transportation, aviation, engineering, or a related field as well as have a good standing in the environmental studies course. To demonstrate their desire to attend NFA, the students were asked to submit a two minute video that would persuade the viewer to grant them permission to attend. In those two minutes the students had to answer the following questions:

1. How has participating in the Mineta Summer Transportation Institute impacted your thoughts about a career in transportation?
2. Why do you want to attend the National Flight Academy?
3. What advice would you give a student thinking about participating in the Mineta Summer Transportation Institute next year?

The students are encouraged but not required to appear in their video; however, their voice must narrate the responses. In addition to tips like using photos from their MSTI activities to enhance their responses, the students are also provided with SJSU resources like SJSU media services, Martin Luther King Jr. Library's Student Technology Training Center, and student success centers on campus to aid them in their video making.

Once submitted, the videos were reviewed by two members of the MSTI team and ranked using a rubric that determined how well each requirement for the video was met. Using a point system of 1 (being the lowest) through 5 (being the highest) each video was rated on a maximum 30 point system.

Upon determining the twelve students that would attend NFA, they and their parents/guardians were contacted and given directions on how to register their children for the program as well as to grant permission for their child to travel. Additional details regarding travel, NFA rules, packing tips, and chaperone contact information were shared as the departure date drew nearer. Students were encouraged to document their journey and to stay in touch with their parents/guardians via text or phone at each interval of their travel, including departures, landings, and layovers.

MSTI students returned home with unique experiences, new friends from all over the U.S., and a greater understanding of how interconnected STEM is with the transportation industry.

Table 2. Grading Rubric for National Flight Academy Video Submissions

Criteria	1 point	2 points	3 points	4 points	5 points
Demonstrates interest and dedication in the MSTI program.	Little interest shown	Some interest shown	Adequate interest shown	Good interest shown	Great interest shown
How has participating in the MSTI program impacted thoughts on a transportation career?	Did not answer	Sort of answered	Briefly answered	Answered	Discussed/persuaded well
Why do you want to attend NFA?	Did not answer	Sort of answered	Briefly answered	Answered	Discussed/persuaded well
What advice would you give a student about participating next year?	Did not answer	Sort of answered	Briefly answered	Answered	Discussed/persuaded well
Overall quality of the video presentation (communication skills, integration of graphics, etc.).	Poor	Low	Adequate	Good	Great
Overall performance in the program.	Poor	Low	Adequate	Good	Great

Conclusion

MTI's MSTI program seeks to address the employee shortage in the transportation industry as well as to increase youth interest in transportation related careers. Through the multi-pronged approach of college credit, guest speakers, field trips, and opportunities for further enrichment, MSTI delivers on its goal of addressing future transportation workforce needs through transportation-focused career awareness initiatives that are designed to introduce disadvantaged secondary school students to all modes of transportation-related careers, provide academic enhancement activities, and encourage students to pursue transportation-related courses of study at the college/university level.

Tracking MSTI alumni has proven challenging due to the limitations around the vast majority of MSTI students being minors when they complete the program and the passage of time. However, in developing an alumni survey that is shared via email when the students graduate high school, MTI has managed to collect alumni data. This data indicates that while many MSTI students do not anticipate joining the transportation industry, they do enroll in degree programs or paths related to STEM, which can lead to a career in transportation. The data indicates that 40% of respondents are pursuing STEM related fields, but only 10% indicated pursuing a transportation career.

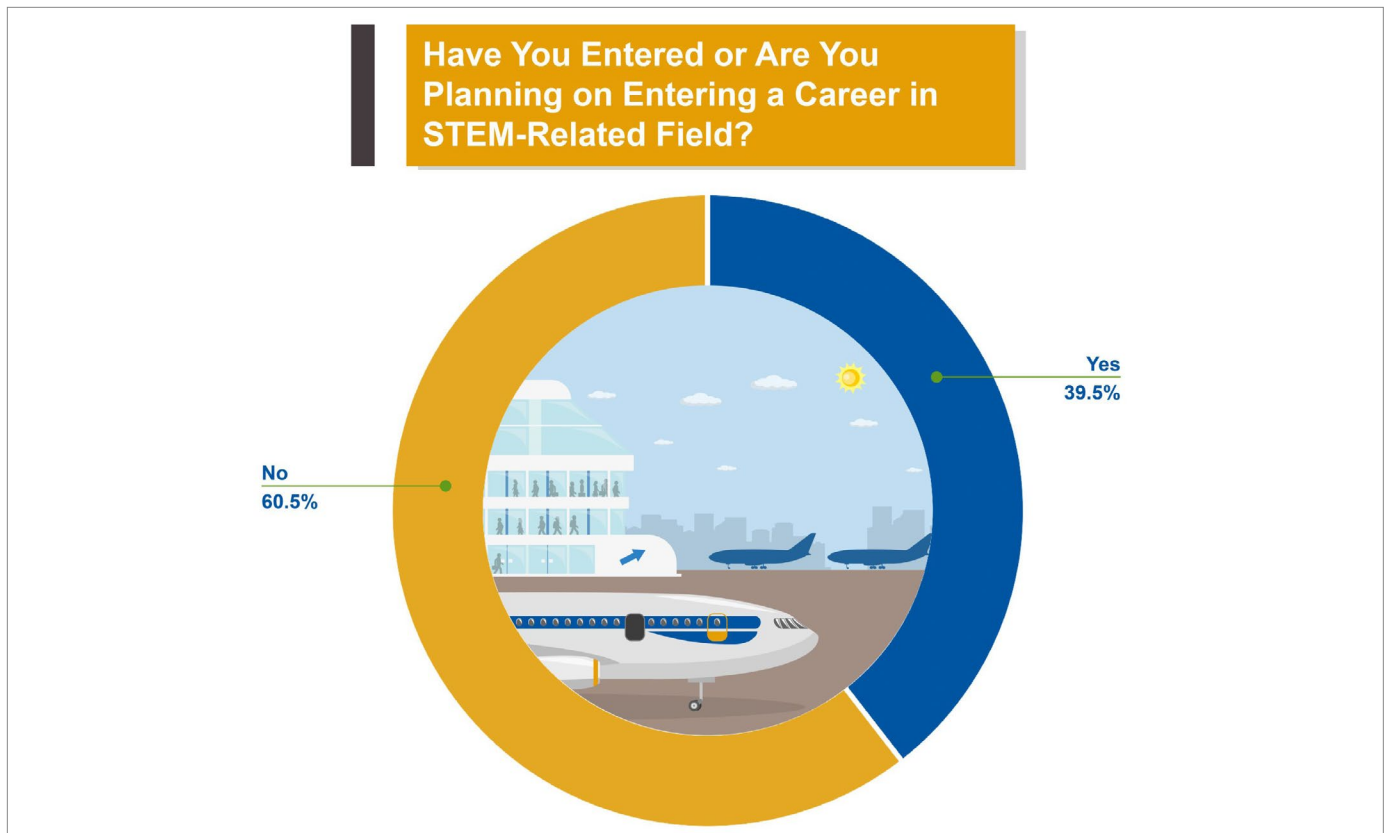


Figure 8. MSTI Alumni Survey Results on STEM-Related Fields

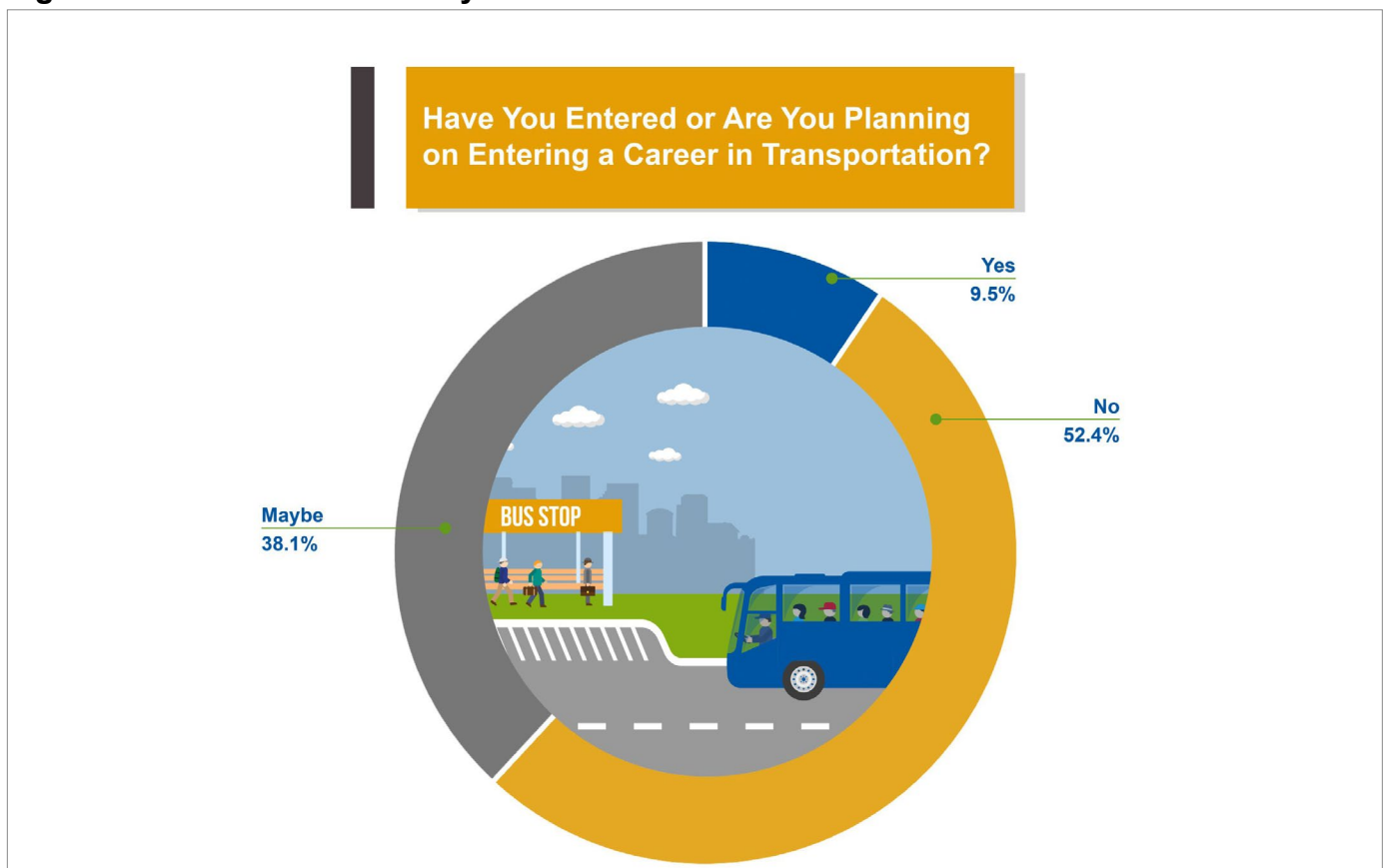


Figure 9. MSTI Alumni Survey Results on Transportation Careers

In addition to the survey, MSTI alumni have reached out to share their post-MSTI experiences, request recommendations, and inquire as to potential internships and career opportunities.

While MTI was not able to offer MSTI in both 2020 and 2021 due to the COVID-19 pandemic, MTI intends to offer the program in Summer 2022 (pending funding).

Parent and Student Testimonials

“My son has had an amazing experience, full of learning, fun, team building, innovation, exposure and a host of other wonderful things I cannot begin to verbalize, which truly touches my heart,” 2018 MSTI parent.

“This was a great program that can expand the minds of students of the outside world and new future career paths. I would recommend this program to classmates, though I would tell them to be a bit serious in this,” 2018 MSTI student.

“[My daughter] has attended almost every summer program out there since elementary school. STI is truly her favorite. You have one of the best programs out there for high school students...[she] will carry what she learned from MSTI to her Transportation internship for the remainder of the summer and continue exploring the world of transportation and engineering,” 2018 MSTI parent.

“I enjoyed the program with the good amount of field trips and hands-on activities offered. I especially loved the last week of the program with high tech U. I wished those 3 days were longer,” 2018 MSTI student.

“This was a once in a lifetime experience and I hope it has opened her eyes to many career paths she had never thought of. This [NFA] trip has been a gift to [my daughter] that has brightened her outlook and has given her not only something to look forward to, but something she takes great pride in participating in,” 2018 MSTI parent.

“I loved this experience with no flaws at all. Everyone had such a great positive attitude, and I wouldn’t change anything,” 2018 MSTI student.

“I love watching (my child) enjoying all of these activities. He comes home telling me his day and can see the enthusiasm in him,” 2019 MSTI parent.

“We are so grateful to all the sponsors who made this rich learning program possible. When we attended the graduation ceremony, I heard that many of the kids’ favorite experience was standing on the tarmac at San José’s airport, and one student commented, ‘I’d never been to an airport before.’ I was reminded that Olivia was just one of the kids who benefitted from the new windows MTI opened,” 2019 MSTI parent.

“The unique MSTI program provided my son the opportunity to learn about different transportation careers through practical experiences and university seminars. I cannot praise enough about it,” 2019 MSTI parent.

“I would like to say that I had a great time being a part of this program, and it’s had a profound effect on me that I will carry forward with me. Thank you so much for allowing me to be part of this experience,” 2019 MSTI student.

“The chaperones and teachers were very kind and made me feel welcome,” 2019 MSTI student.

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About the Author

Irma Garcia serves as MTI's Communications and Operations Manager where she manages the institute's internal and external communications, events, and workforce development programs and partnerships. Irma holds a M.A. and B.A. in English and Comparative Literature from San José State University.

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