

Empowering the  
New Mobility Workforce

Educating, Training, and Inspiring Future Transportation Professionals



Edited by Tyler Reeb, Ph.D.



**The Port**  
**OF HUENEME**

**Empowering the New Mobility  
Workforce**

**June 26th, 2019**

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# New Mobility Workforce Challenges

## Empowering the New Mobility Workforce

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- By 2022, transportation employers will need to hire 4.6 million workers—1.2 times the current transportation workforce.<sup>1</sup>
- Transformational technologies are developing so quickly that current educational and training providers are struggling to keep pace.

<sup>1</sup> Transportation Learning Center (TLC) and Jobs for the Future (JFF) analysis based on EMSI 2014 Industry Report. Data retrieved from EMSI in June 2014.

# New Mobility Workforce Challenges

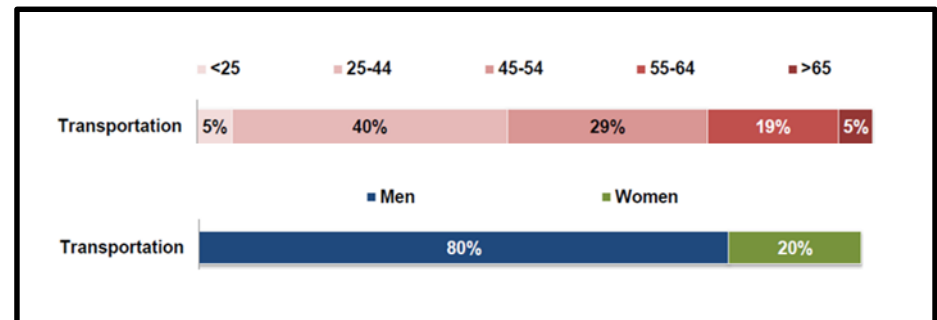
## Empowering the New Mobility Workforce

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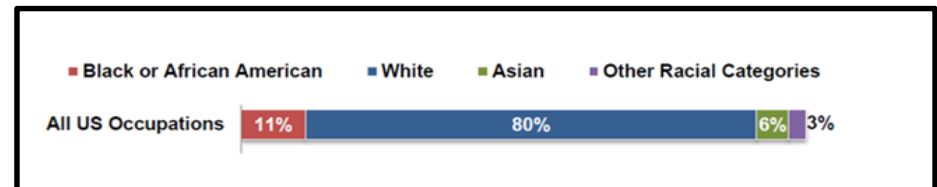


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- More than half of current transportation workers are 45 years or older. The need to replace retiring workers creates significant workforce challenges.



- The new workforce needs to reflect the current U.S. demographic.



# ***Empowering the New Mobility Workforce***

***A few highlights from the book...***

# **LA Metro: changing the mobility game—inspiring and training a new workforce, filling leadership voids, and creating farm teams for the future**

Phillip A. Washington  
Chief Executive Officer, LA Metro

Joanne Peterson  
Chief, Human Capital and Development, LA Metro

# Farm Teams for the Future



Source: LA Metro

- Introducing education opportunities to students aged 12 to 18, LA Metro initiated a Transportation School concept called E3: exposing, educating and employing youth in the transportation industry.
- In partnership with LA County, LA Metro has established a Transportation Academy boarding school which:
  - Targets and recruits at-risk youth
  - Fundraises to offer free tuition
  - Supports students' life needs
  - Hopes to build a qualified workforce

# **Inspiring the next generation mobility workforce through innovative industry-academia partnerships**

**Stephanie S. Ivey, PhD**  
**Associate Dean for Research**  
**Professor Herff College of Engineering**

# Inspiring the Next Generation



Students in the 2018, Girls Experiencing Engineering program at the University of Memphis attend a viewing of ASCE's 'Dream Big'.

- Dream Big is the first giant-screen film to answer the call of the STEM (Science, Technology, Engineering, Math) initiative, which aims to inspire kids of diverse backgrounds to become the innovators who will improve the lives of people across our entire planet as we head into the 21st Century and beyond.
- It is imperative that these programs begin in K-12 and continue to inspire the next generation towards their career in transportation.



# Inspiring the Next Generation



Patrice Thomas (center) mentors Amanda and Kristen Haltom in the GEE program. Amanda and Kristen are now both engineering professionals

- While women account for 50% of the population and 46% of the total workforce in the United States, they make up only 4%-25% of the workforce in transportation-specific occupations.
- Women are underrepresented broadly at all levels in STEM – particularly in transportation – and the numbers get worse, the higher up the career ladder you look.

# **Creating Communities of Practice for the New Mobility Workforce: Lessons from the National Transportation Career Pathway Initiative**

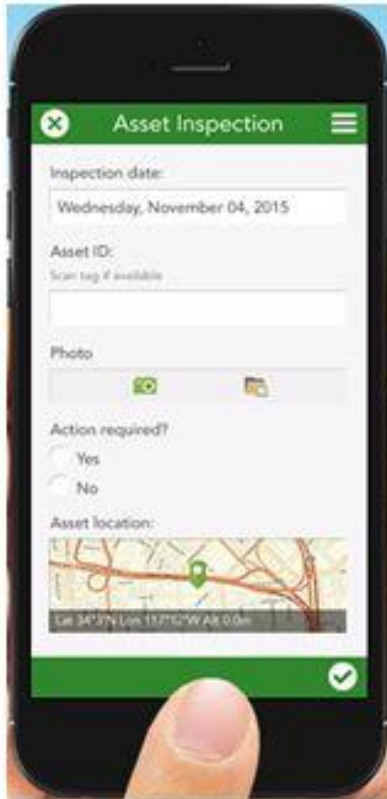
**Thomas O'Brien, Ph.D.**

**Executive Director, Center for International Trade and Transportation**

**Scott Jakovich**

**Project Coordinator, National Transportation Career Pathways Initiative**

## Addressing Transformational Technology in the Classroom



- The Southwest Transportation Workforce Center (SWTWC), in partnership with the Los Angeles Trade Technical College (LATTC), formally launched “ARC 341” on February 24, 2018; a pilot class in metropolitan GIS planning systems with a transportation focus.
- The program aims to provide new technological competencies to students who are interested in transportation and urban planning professions.

## Addressing Transformational Technology in the Classroom



- Members of the National Network for the Transportation Workforce developed a national career pathway program to inspire, recruit, and prepare future professionals for transportation disciplines in planning, engineering, environment, safety, and operations.

# Addressing Transformational Technology in the Classroom



ARC 342 Students and Virginia Tsu, Director of FHWA's Center for Transportation Workforce Development, on the final day of the pilot course.



# The Uniting Principle for the book:

**This book is a network of  
communities of practice writ large.**

- Leaders in education, industry, and government need to create workforce development ecosystems that facilitate learning and upskilling for emerging and incumbent transportation workers.



# Automation, what does it mean?





# Technology = Clean Air

98%  
NOx

92%  
PM

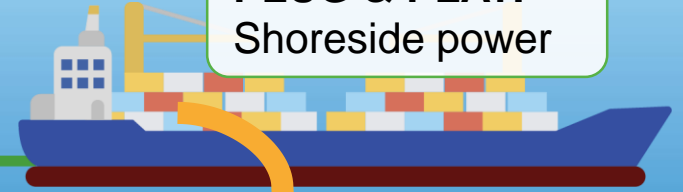
55%  
CO2



**BATTERY STORAGE:**  
Peak shaving, store energy



**PLUG & PLAY:**  
Shoreside power



**CLEAN EFFICIENCY:**  
Powered by electricity



**NEW ERA:**  
Cords & plugs to power future equipment



**LED LIGHTING**

**YARD TRUCKS:**  
State of the art



**SHIP TO STORE:**  
Zero emission

# Technology = Clean Air



75%  
CO<sub>2</sub>

OAKLAND: CLEAN AIR PLAN

# Technology = Clean Air

SAN PEDRO PORTS: \$14B CLEAN AIR PLAN

90%  
SO<sub>x</sub>

50%  
NO<sub>x</sub>

80%  
PM



## AUTOMATION ? UNIONIZED LABOR



### PMA-ILWU CONTRACTS

- Industry **CAN introduce automation**
- Labor Realized **Increased Pay & Benefits**
- Recognizes that **jobs CAN be lost** to use of new machinery
- Allows evolution through training and education, **Jobs CAN change**

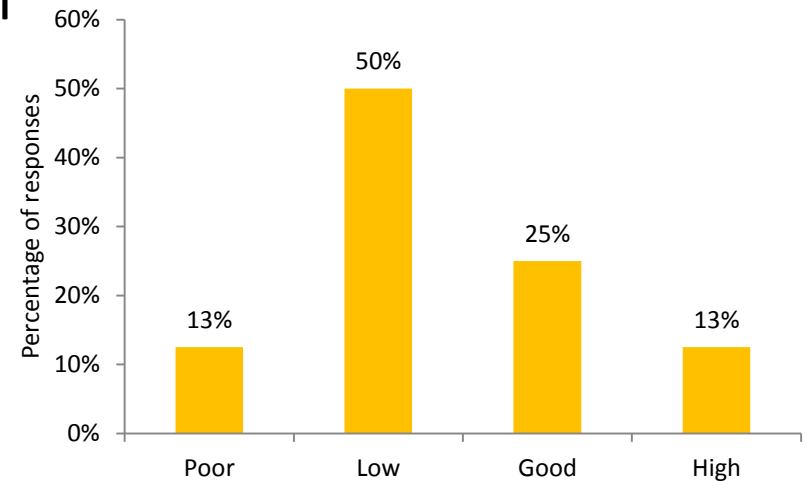
**1960: 28,000 LONGSHOREMEN**

**2019: 14,000 LONGSHOREMEN**

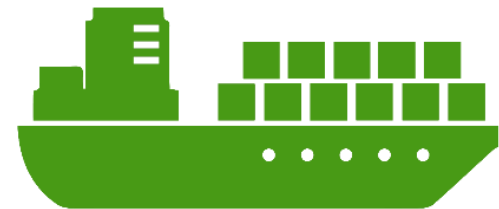
## FINDINGS FROM PORT AUTHORITY WORKFORCE SURVEY

What is the familiarity of the port authorities on the topics of vehicular connectivity and automation?

- **50%** of the respondents identified that port authorities have **low knowledge** of automation technology

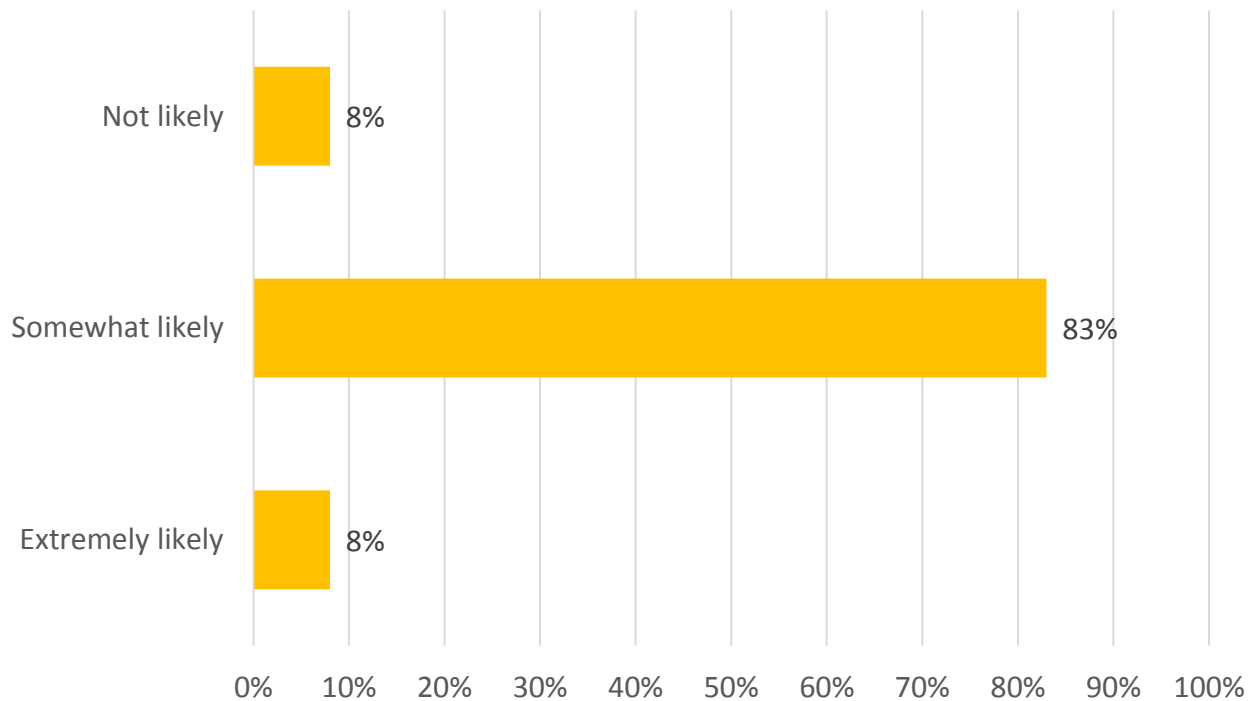


24 AAPA PORTS INFORMED THE CHAPTER



## FINDINGS FROM PORT AUTHORITY WORKFORCE SURVEY

Would the port authorities invest their own dollars into upgrading port infrastructure in preparation of a connected automation ecosystem?

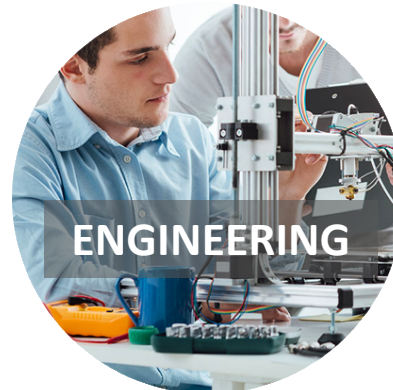


## FINDINGS FROM PORT AUTHORITY WORKFORCE SURVEY

**What are the greatest skills gaps?** (*Administrative, labor, communication, technical, etc.*)

- **Advanced technology** such as zero and near zero technologies
- **Rapid changes in technology** with low adaptability to baby boomers
- **Advanced vocational skills** at the entry level and knowledge of supply chain economics

**FUTURE PORT JOBS**



## WORKFORCE OPPORTUNITIES - RESEARCH



Project managers for supply chain automation  
Automation engineers



Mechanical application engineers  
Solution architects



Blockchain managers, technologists, developers

Web designers, developers

Social media analysts, specialists



Cyber security managers, specialists



## FINDINGS FROM PORT AUTHORITY WORKFORCE SURVEY

Do you believe that the future workforce benefits from being involved in training programs (apprenticeships, internships, certification programs, etc.) while they're still in high school or college/university?

- 100% of the respondents answered with an overwhelming **YES**



Maatimu Brown, 2017  
Port of Hueneme intern

## FINDINGS FROM PORT AUTHORITY WORKFORCE SURVEY

**How soon do you believe we need to be training the future workforce?**

### **IN HIGH SCHOOL**

- SKILLS TRAINING
- WORK WITH TECH INDUSTRY
- CERTIFICATION PROGRAMS



## FINDINGS FROM PORT AUTHORITY WORKFORCE SURVEY

What are some of the most important workforce skill sets that you are looking for in your growing organization?

**LEADERSHIP**

**SOCIAL RESPONSIBILITY**

**INTEGRITY**

**ABILITY TO COLLABORATE**

**ENTREPRENEURIAL THINKING**

**ABILITY TO WORK IN GROUPS**

**CRITICAL THINKING**

**COMMUNICATION**

**SOFT SKILLS MATTER!**





# DISCUSSION

**Q: How should topics relating to automation be introduced to workforce and as part of apprenticeship training?**

**Q: Technology has emerged as the most disruptive force in all sectors. What are specific technical skills required for entry level workers in your industry?**

**Q: How do we combine technological skills with soft skills such as project management, communications and writing in an apprenticeship model?**

**Q: How do we engage young adults and high-school students in the apprenticeships? What skills should we be focusing on at that age?**

**Q: What is a good starting point for early workforce development?**

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# Thank you!

<https://www.elsevier.com/books/empowering-the-new-mobility-workforce/reeb/978-0-12-816088-6>