

## Identifying Current and Future Training Needs of the Public Transportation Industry *Final Report*

MARCH 2021

FTA Report No. 0191

**PREPARED BY**

Robert B. Noland, Ph.D.

Stephanie DiPetrillo

Andrea Lubin

Alan M. Voorhees Transportation Center  
Rutgers, The State University of New Jersey



## COVER PHOTO

*Courtesy of Oran Viriyincy*

## DISCLAIMER

*This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof. The United States Government does not endorse products or manufacturers. Trade or manufacturers' names appear herein solely because they are considered essential to the objective of this report. The opinions and/or recommendations expressed herein do not necessarily reflect those of the U.S. Department of Transportation.*



# Identifying Current and Future Training Needs of the Public Transportation Industry *Final Report*

**MARCH 2021**

FTA Report No. 0191

**PREPARED BY**

Robert B. Noland, Ph.D., Director  
Stephanie DiPetrillo, Senior Research Specialist  
Andrea Lubin, Senior Research Specialist  
Alan M. Voorhees Transportation Center  
Edward J. Bloustein School of Planning and Public Policy  
Rutgers, The State University of New Jersey  
33 Livingston Avenue, New Brunswick, NJ 08901

**SPONSORED BY**

Federal Transit Administration  
Office of Research, Demonstration and Innovation  
U.S. Department of Transportation  
1200 New Jersey Avenue, SE  
Washington, DC 20590

**AVAILABLE ONLINE**

<https://www.transit.dot.gov/about/research-innovation>

## Metric Conversion Table

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL
<b>LENGTH</b>				
<b>in</b>	inches	25.4	millimeters	mm
<b>ft</b>	feet	0.305	meters	m
<b>yd</b>	yards	0.914	meters	m
<b>mi</b>	miles	1.61	kilometers	km
<b>VOLUME</b>				
<b>fl oz</b>	fluid ounces	29.57	milliliters	mL
<b>gal</b>	gallons	3.785	liters	L
<b>ft<sup>3</sup></b>	cubic feet	0.028	cubic meters	m <sup>3</sup>
<b>yd<sup>3</sup></b>	cubic yards	0.765	cubic meters	m <sup>3</sup>
NOTE: volumes greater than 1000 L shall be shown in m <sup>3</sup>				
<b>MASS</b>				
<b>oz</b>	ounces	28.35	grams	g
<b>lb</b>	pounds	0.454	kilograms	kg
<b>T</b>	short tons (2000 lb)	0.907	megagrams (or "metric ton")	Mg (or "t")
<b>TEMPERATURE (exact degrees)</b>				
<b>°F</b>	Fahrenheit	5 (F-32)/9 or (F-32)/1.8	Celsius	°C

**REPORT DOCUMENTATION PAGE**

Form Approved  
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.  
**PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.**

1. REPORT DATE March 2021		2. REPORT TYPE Final		3. DATES COVERED 2/17-11/20	
4. TITLE AND SUBTITLE Transit Training Needs Assessment: Identifying Current and Future Training Needs of the Public Transportation Industry, Final Report				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Robert B. Noland, Ph.D., Stephanie DiPetrillo, Andrea Lubin				5d. PROGRAM NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Alan M. Voorhees Transportation Center Edward J. Bloustein School of Planning and Public Policy Rutgers, The State University of New Jersey 33 Livingston Avenue, New Brunswick, NJ 08901				8. PERFORMING ORGANIZATION REPORT NUMBER  FTA Report No. 0191	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Department of Transportation Federal Transit Administration Office of Research, Demonstration and Innovation 1200 New Jersey Avenue, SE, Washington, DC 20590				10. SPONSOR/MONITOR'S ACRONYM(S) FTA	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Available from: National Technical Information Service (NTIS), Springfield, VA 22161; (703) 605-6000, Fax (703) 605-6900, email <a href="mailto:orders@ntis.gov">orders@ntis.gov</a> ; Distribution Code TRI-30					
13. SUPPLEMENTARY NOTES [www.transit.dot.gov/about/research-innovation] [https://www.transit.dot.gov/about/research-innovation] [https://doi.org/10.21949/1510677] Suggested citation: Federal Transit Administration. Transit Training Needs Assessment: Identifying Current and Future Training Needs of the Public Transportation Industry, Final Report. Washington, D.C.: United States Department of Transportation, 2020. https://doi.org/10.21949/1510677					
14. ABSTRACT This study, commissioned by the National Transit Institute (NTI) as part of its work to address training needs, investigated skills gaps among the workforce of the U.S. public transportation industry, identified strategies to address those gaps, and explored approaches to more successfully recruit and retain the full spectrum of the transit workforce, from frontline to technical to professional staff. The researchers documented five recurring areas of cross-cutting training needs: communicating with the public, conflict resolution, verbal and written communication skills, leadership and supervision skills, and understanding of disability issues and communication with populations with diverse abilities. The researchers also documented training to understand rapidly- changing technologies as a significant area of concern, as the need for such training cuts across many job duties and positions.					
15. SUBJECT TERMS Training, frontline staff, maintenance staff, executive and management training, recruitment, staff retention, technological change, skills, skills gaps					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Unlimited	18. NUMBER OF PAGES 123	19a. NAME OF RESPONSIBLE PERSON
a. REPORT Unclassified	b. ABSTRACT Unclassified	c. THIS PAGE Unclassified			19b. TELEPHONE NUMBER

Standard Form 298 (Rev. 8/98)  
Prescribed by ANSI Std. Z39.18

## TABLE OF CONTENTS

1	Executive Summary
5	Section 1: Introduction
8	Section 2: Study Methodology
10	Section 3: Background
27	Section 4: Qualitative Findings: Listening Sessions, Focus Groups, and Key Informant Interviews
45	Section 5: Survey Findings
67	Section 6: Moving Forward: Guiding the Way For a Successful 21st Century Public Transportation Workforce
72	Appendix 1: Focus Group Topic Guide
78	Appendix 2: Structured Telephone Interview Topic Guide
81	Appendix 3: Focus Group Observations
86	Appendix 4: Survey Recruitment Protocol
92	Appendix 5: Survey Questionnaire
111	References

## LIST OF FIGURES

13	Figure 3-1: Transit ridership by mode, U.S., 1998–2018
13	Figure 3-2: Transit ridership on demand response and other modes, U.S., 1998–2018
14	Figure 3-3: Transit ridership on rail modes, U.S., 1998–2018

## LIST OF TABLES

15	Table 3-1: Employment Demographics of Rail Transportation, Transit and Ground Passenger Transportation, Transit Industry, Transportation and Warehousing, and All Industries, 2019
16	Table 3-2: Employment Projections, Transit and Related Industry Occupations, 2018–2028
46	Table 5-1: Distribution Protocol for Email Survey, 2019
46	Table 5-2: Response Rates
46	Table 5-3: Distribution of Agency Responses by Mode (N=1720)
47	Table 5-4: Reported Size of Transit Service Area (N=1720)
47	Table 5-5: Regional Distribution of Respondents (N=1720)
47	Table 5-6: Current Position of Respondents (N=1720)
48	Table 5-7: Job Classifications and Functions
49	Table 5-8: Number of Respondents in Operations by Job Function (N=566)

49	Table 5-9:	Number of Respondents in Administration by Job Function (N=1394)
50	Table 5-10:	Years Worked in Public Transportation Industry (N=1665)
50	Table 5-11:	Respondent Involvement with Training at Agency (N=1341)
51	Table 5-12:	Agency Limitations to Providing Training (N=873)
51	Table 5-13:	How Agency Staff Typically Receive Training (N=1652)
52	Table 5-14:	How Agency Staff Typically Trained (N=1648)
52	Table 5-15:	Variation Among Agency Primary Mode in training Practices
53	Table 5-16:	Skills Most Lacking Among Agency's Current Workforce (N=429)
53	Table 5-17:	Variation by Primary Mode of Agency in Skills to Most Lacking Among Current Workforce
54	Table 5-18:	Administrative Job Areas Most in Need of Additional Training (Based on Top Three Selected) (N=1387)
55	Table 5-19:	Operations Job Areas at Your Agency Most in Need of Additional Training (Based on Top Three Selected) (N=1252)
55	Table 5-20:	Top Customer Service Training Needed
56	Table 5-21:	Top Workplace Skills Training Most Needed
57	Table 5-22:	Top ADA-related Training Most Needed
57	Table 5-23:	Top Emergency Response Training Most Needed
57	Table 5-24:	Top Operations Training Most Needed
58	Table 5-25:	Top Professional Development Training Most Needed
58	Table 5-26:	Top Technical Training Most Needed
58	Table 5-27:	Top Other Kinds Of Training Most Needed
59	Table 5-28:	Partners Worked with for Training and/or Recruitment (N=1204)
59	Table 5-29:	Educational Partners Worked with for Training and/or Recruitment (N=840)
60	Table 5-30:	Respondent Involvement with Recruitment and Hiring (N=966)
60	Table 5-31:	Barriers to Recruiting New Staff (N=968)
61	Table 5-32:	Difficulty with Recruiting Operations Positions
61	Table 5-33:	Difficulty with Recruiting Administration Positions
62	Table 5-34:	Strategies Used to Recruit Generally and for Young Workers Specifically
63	Table 5-35:	Difficulty Retaining Staff in Operations Positions
63	Table 5-36:	Difficulty Retaining Staff in Administrative Positions
64	Table 5-37:	Strategies Used to Retain Staff Generally and for Young Workers Specifically

## Acknowledgments

The research team wishes to acknowledge the following individuals and organizations that graciously assisted with this study, contributing to its successful completion. We thank the Federal Transit Administration (FTA) for funding this research and its commitment to identifying and exploring strategies to meet the ever-changing workforce needs of the United States (U.S.) public transportation industry. Support and insights shared by FTA staff, including Mary A. Leary and Lisa Colbert, were invaluable. We express our gratitude to former National Transit Institute (NTI) Director Paul J. Larrousse, who although no longer with us, offered steadfast encouragement throughout the study and generously shared his vast knowledge of the U.S. public transportation industry workforce. We also thank Billy Terry, NTI Director, for his leadership, support, and commitment to the realization of this nationwide research endeavor.

Much of the research undertaken for this study necessitated gathering information and feedback from transit professionals nationwide via tasks including listening sessions, focus groups, and survey work. We thank the following organizations and individuals for facilitating those tasks: Coleen Meyer with NTI; the NTI Advisory Board; Pamela Boswell, Lindsey Robertson, and Joseph Niegoski with the American Public Transportation Association (APTA); and Scott Bogren and Chris Zeilinger with the Community Transportation Association of America (CTAA). Special thanks to the listening session and focus group participants and the study survey respondents whose forthright and open participation contributed to the richness and diversity of data collected for this research. Finally, we extend gratitude to Rutgers University staff who assisted with this study, specifically Marc Weiner and Sean Meehan, and to the Rutgers Bloustein School of Planning and Public Policy students who also contributed much to this effort, namely Mary Buchanan, Jasmine Jones-Bynes, and Sicheng Wang.

## Abstract

This study, commissioned by the National Transit Institute (NTI) as part of its work to address training needs, investigated skills gaps among the workforce of the U.S. public transportation industry, identified strategies to address those gaps, and explored approaches to more successfully recruit and retain the full spectrum of the transit workforce, from frontline to technical to professional staff. The researchers documented five recurring areas of cross-cutting training needs: communicating with the public, conflict resolution, verbal and written communication skills, leadership and supervision skills, and understanding of disability issues and communication with populations with diverse abilities. The researchers also documented training to understand rapidly-changing technologies as one significant area of concern, as the need for such training cuts across many job duties and positions.

*When we strive to become better than we are,  
everything around us becomes better too.*

—Paulo Coelho, *The Alchemist*

In the above quote, renowned author Paulo Coelho speaks to the benefits of self-improvement, collectively and to the individual. When an entity—such as the United States (U.S.) public transportation industry—commits to continuous self-improvement, its workforce, the travelers who use its services, and the community will all benefit. Therefore, understanding what an industry needs to train and develop its workforce is essential. The National Transit Institute (NTI) implemented this study at the request of the Federal Transit Administration (FTA) to assess and codify the public transportation industry’s training practices, interests, and priorities and to determine the training needs of the public transportation industry, which span a diversity of different types and sizes of agencies. Staff at the Alan M. Voorhees Transportation Center (VTC) at Rutgers, The State University of New Jersey, working in collaboration with NTI, conducted the research. This report presents the findings of this nationwide study.

The study explores the workforce skills gaps within the U.S. public transportation industry, strategies to address those gaps, and approaches to more successfully recruit and retain employees representing the full spectrum of the transit workforce, from frontline to technical to professional staff. This study is part of NTI’s statutory mission to address training needs for the public transportation industry.

Methodologically, the researchers used different approaches to obtain information and data, including an initial literature review, listening sessions, focus groups, informant interviews, and a national survey. The research team interacted with many transit professionals during this study to gather feedback. A central theme of the research was to identify strategies and implemented practices that holistically strengthen and improve the transit workforce of today and tomorrow. A literature review of prior research on transit training needs grounded the study on existing knowledge. Detailed data collection began with two listening sessions at the NTI Transit Trainers Workshop in Nashville, Tennessee, in March 2017. These sessions illustrated the concerns and issues of operators and maintenance staff. Next, nine focus group sessions were held at three national conferences (three at each) in May and June 2017. These conferences were the American Public Transportation Association (APTA) Bus and Paratransit Conference in Reno, Nevada (May 7–10, 2017), the APTA Rail Conference in Baltimore, Maryland (June 11–14, 2017), and the Community Transportation Association of America (CTAA) Expo (June 11–15, 2017) in Detroit, Michigan. Informant interviews were conducted nationwide with a myriad of stakeholders. Interviewees included personnel from 21 transit agencies and individuals from labor unions,

consultancies, and higher education. Finally, a national survey was distributed via email using NTI's email list and a sample of APTA members. The survey received 1,720 responses from different transit agencies across the country.

The breadth of research methods gave the team confidence in the results, with key results summarized below:

- **The right skills exist.** Most agencies believe that their current workforce has the right skills. The primary skills needed are leadership/supervisory, oral and written communication, conflict resolution, and project management.
- **Partnerships predominate.** Most agencies work with external partners on training, including educational partners. Partners include other transit agencies; federal, state, and local governments; community colleges; vocational schools; and four-year colleges.
- **Resources and available training time are scarce.** Many reported challenges to providing training, particularly the difficulty of scheduling time for employees to train. Also reported was a lack of resources, which may be why the public transportation industry devotes only about 0.1% of resources to training (compared to the private sector's 4–6%).
- **There is a lack of awareness of careers.** There was a reported need to improve awareness of transit career pathways for young people (as well as those already employed). Wages are seen as noncompetitive, as are nonstandard work hours; however, benefit packages are seen as a plus, though younger employees are generally less attracted by benefits.
- **Agencies use a variety of strategies for recruitment.** Online applications and advertising are helpful, but providing internship opportunities is especially important for attracting younger workers. Fostering a positive awareness of how transit is green and contributes to the community may also attract young people.
- **Strong benefit packages help retain staff.** Other factors include fostering a positive and supportive agency culture, communicating pay increase policies, and emphasizing positive community impacts. Younger people are more likely to be retained with flexible work hour options and tuition assistance.
- **Rapidly-changing technologies are a challenge.** Training to understand rapidly-changing technologies cuts across many job duties. This includes administrative positions such as executive/management, procurement and purchasing, and transit service planning. New technologies are also affecting operations positions including dispatchers, first-line supervisors,<sup>1</sup> and vehicle operators. Many respondents mentioned the need to fully understand

---

<sup>1</sup> For this report, "first-line supervisor" refers to supervisors (managers, foremen, etc.) that directly supervise and coordinate the work of frontline employees. First-line supervisors are also often referred to as "frontline supervisors" in the transit industry.

requirements for battery-electric buses, which some agencies are deploying. Only a few mentioned directing attention now to the role autonomous vehicle technology may play in the industry.

- **Cross-cutting training needs are important.** Recurring themes across almost all job categories included communicating with the public, conflict resolution, verbal and written communication skills, leadership and supervision skills, understanding of disability issues and communication with populations with diverse disabilities, and the challenge of coping with rapidly changing technologies.
- **Training needs are specific to different positions.** Although many commonalities were found, some job categories require specific needs:
  - *Vehicle operators* – conflict resolution and communicating with the public; disability awareness and Americans with Disabilities Act (ADA) training, especially for serving customers with mental health and cognitive impairments; basic workplace skills such as verbal communication; and emergency response training.
  - *First-line supervisors* – professional development including leadership training, staff supervision, and problem-solving; basic workplace skills including conflict resolution; and verbal and written communication skills.
  - *Administrative staff* – leadership training; conflict resolution; servicing consumers with mental health or cognitive impairments; communicating with the public; and diversity awareness training.
- **Transit systems are innovating.** A variety of innovative practices are being used to strengthen the workforce, including:
  - *Developing sustainable partnerships* – the education sector and labor unions can provide a pipeline for agency internships, apprenticeships, and staff recruitment and have been developed as partners.
  - *Providing professional development opportunities* – pursuing cost-effective and innovative training initiatives that meet agency needs for staff development.
  - *Fostering a positive and supportive agency culture* – working on robust intra-agency communication among all staffing levels helps to foster a positive work environment.
  - *Opportunities for professional mobility* – making sure that agency staff are aware of how to achieve success and advance their careers within the agency.

As one listening session participant shared, the industry should promote a “hire to retire” philosophy with their recruitment, training, and retention policies and practices, directing significant attention to communicating a genuine commitment to each employee’s career journey within their respective agency.

The findings from the extensive outreach undertaken for this study were extremely encouraging regarding prospects for the transit industry workforce

moving forward. As one participant offered on this topic, “Better is possible.” Discussions with agency professionals nationwide revealed that although challenges exist, the transit industry offers a diversity of job positions that can meet the career goals of nationwide job seekers with divergent ambitions and skill sets. The obstacle has been generating awareness among U.S. job seekers about career paths in the public transportation industry. This must be addressed via a multipronged effort, beginning with a concerted plan to attract America’s youth to the profession while also reaching out to current job-seekers beyond the transit industry who may possess the requisite education, skills, and/or interest to support a thriving career in the public transportation industry.

The research presented in this report is designed to inform and inspire the leaders of the U.S. transit workforce, to engage and empower the transit industry of today and tomorrow to “strive to become better than we are,” with the ultimate goal of fostering a thriving workforce supporting the mobility of their individual communities and the mobility of the entire nation.

# Introduction

This report identifies the training needs of the public transportation industry based on several years of research. The report includes background information on expected trends in the industry, a review of prior work that has examined training issues, and a qualitative and quantitative research approach to gather more detailed information. It also includes issues associated with recruitment and retention of employees as these are critically linked to training needs.

Acknowledging that technological progress and innovations largely shape the public transportation industry, the industry workforce is critical for guiding the sector through the 21st century.<sup>2</sup> Successfully positioning the public transportation workforce to excel requires understanding and recognition of its strengths and deficiencies. This study's qualitative and quantitative methodologies were designed to collect primary data from more than 1,800 individuals affiliated with the U.S. transit industry in myriad ways, including the following:

- A national literature review
- 2 listening sessions with 13 transit industry professionals from 9 states
- 9 focus groups with 68 participants from 33 states representing staff and leadership from 66 transit agencies and/or personnel from labor unions, consultancies, and higher education institutions
- Key informant interviews with 33 participants from 13 states representing staff and leadership from 21 transit agencies and/or personnel from labor unions, consultancies, and higher education institutions
- A nationwide online survey of transit agency employees that yielded a total of 1,720 responses from individuals representing all 50 states, the District of Columbia, and U.S. territories, from nearly 700 transit agencies and supporting organizations.

For each of these data-gathering methods, the research team identified and recruited participants from transit agencies with diverse geography, size, and modes, including urban and rural services, those with extensive rail services, and those with just bus service. Some smaller agencies provided only on-demand services. Almost all agencies offer demand-response service for targeted populations (e.g., persons with disabilities, older adults).

---

<sup>2</sup> This research was completed prior to the COVID-19 pandemic, which has had a large impact on the public transportation industry. It is still not known what the long-term consequences for the public transportation industry will be; this may change future workforce needs in many agencies.

The research team prioritized participation from transit industry professionals with diverse roles within the industry. Transit workforce duties fell into four core “functional areas”: vehicle operations, vehicle maintenance, non-vehicle maintenance (facilities, track, and road), and central services and administration (including management of capital). Among large transit agencies in the U.S., about 60% of jobs are in operations, 20% in vehicle maintenance, 10% in non-vehicle maintenance (facilities, track, and road), and about 10% in administrative and capital functions [2]. Recognizing that the transit industry’s workforce varies widely not only by functional area but also by occupation title, duties, skill requirements, and compensation level, the study team strove to collect feedback from a sample that reflects this diversity. Each of these data gathering exercises provided a unique lens into the public transportation industry.

Listening sessions were held with a range of individuals, all of whom were particularly interested in issues of training. In the focus groups, participants were primarily managers—some new to the industry and some with decades of experience. In the interviews, most participants represented agency senior management, such as Chief Executive Officers (CEOs), directors, general managers, and senior personnel from human resources and talent development, planning, operations, safety, maintenance, marketing, engineering, and design. The survey was designed to collect information from workers in all roles within the industry. The research team gathered feedback from staff at transit labor unions and higher education institutions and from selected millennial members of the transit workforce. Finally, the study team strove to ensure feedback from agency personnel whose job required frequent interactions with the public as well as from those directly involved with recruitment and training efforts.

Investigating personnel challenges facing the public transportation industry is especially timely, as the workforce demands of the industry are ever-evolving. In 2019, there were about 430,000 people working directly for U.S. public transportation providers and many others working in supporting industries. Shifts in job roles, anticipated retirements, technology advancements, and changing ridership trends will all contribute to future transit workforce needs. These factors will have both positive and negative impacts on industry hiring demands; however, net industry hiring is anticipated to grow over the next five years.

Core challenges facing the contemporary transit industry workforce are given significant attention in this report. Those challenges include but are not limited to matching a skilled workforce to escalating demand for transit, determining how to successfully incorporate technology advancements and changes, weakness in recruitment and retention; institutional constraints (e.g., work hours, pay, job stress), agency culture, and growing skills gaps, both soft and hard, compounded by limited training opportunities.

In addition to this Introduction, the report is organized as follows:

- Section 2 – Study Methodology
- Section 3 – Background
- Section 4 – Qualitative Findings: Listening Sessions, Focus Groups, and Key Informant Interviews
- Section 5 – Survey Findings
- Section 6 – Moving Forward: Guiding the Way For a Successful 21st Century Public Transportation Workforce

## SECTION 2

# Study Methodology

Qualitative and quantitative primary data collection was undertaken by the study team in its investigation of vital workforce issues affecting the U.S. public transit industry. These issues included employee skills gaps, strategies to diminish these gaps, and training, recruitment, and retention practices and challenges. The study team used the information gathered during each successive task to inform later work. Qualitative tasks focused on convening several listening sessions, followed by focus groups, and then a series of key informant interviews with U.S. transit industry personnel working with rail (commuter, heavy, light, and rapid transit), bus (commuter and bus rapid transit), and demand-response modes. Implementation of a nationwide online survey with U.S. public transit industry personnel was the final study task and the prime quantitative research activity pursued.

Study listening sessions were facilitated as an informal data gathering activity that invited participants to partake in an open-ended 90-minute group brainstorming discussion on transit industry workforce skills gaps, training challenges, and strategies to address each. In contrast, the focus groups and interviews took place in a formalized manner, with customized discussion guides used to facilitate these latter activities. Focus group sessions typically convened for 90–120 minutes, with 8–12 persons participating in each session. Interviews were conducted via telephone and typically were completed within a time frame of 60 minutes or less. Focus group sessions and interviews were audio-recorded to assist team preparation of individual session reports. All relevant study research materials, including customized focus group topic guides, interview topic guides, the online survey instrument, and associated participant consent forms were submitted to and approved by the Rutgers University Institutional Review Board (IRB), part of the University’s Human Subjects Protection Program.

The study listening sessions and focus groups were convened at national gatherings of transit industry personnel. Specifically, the listening sessions were held at the National Transit Institute (NTI) Transit Trainers Workshop, and focus groups were convened at the American Public Transportation Association (APTA) Bus and Paratransit Conference, the APTA Rail Conference, and the Community Transportation Association of America (CTAA) Expo, all in 2017. Listening session participation was open to all conference attendees. For the focus groups, the researchers shared invitations with all conference attendees, with assistance from the host organizations, and selected interested parties to achieve geographic, demographic, and career-length diversity. The research team conducted a total of 11 group data collection events (2 listening sessions and

9 focus groups); in total, 81 individuals participated in either listening sessions or focus groups, representing 77 organizations in 32 states and the District of Columbia.

In late 2017 and the first half of 2018, the study team conducted confidential, key informant interviews with 33 individuals from 21 organizations in 13 states. Study interview selection criteria focused on identifying professionals affiliated with agencies with diverse geography, size, and modes. Most agencies selected provided fixed-route services, with many also offering demand-response service for targeted populations (e.g., persons with disabilities). The vast majority of interviewees represented agency senior management, with several interviews conducted with staff at transit labor unions and higher education institutions. Agency personnel interviewed included CEOs, directors, general managers, and senior personnel from human resources and talent development, planning, operations and safety, maintenance, marketing, engineering, and design. The team also conducted interviews to gather feedback from millennial members of the transit workforce.

Finally, in Spring and Summer 2019, the team undertook the final study data collection effort, a national transit personnel online survey. The study team developed, tested, and examined a variety of sampling methods, and mailing lists from NTI and APTA were used. Ultimately, 1,720 persons completed the survey, representing nearly 700 organizations in 50 states, the District of Columbia, and U.S. territories.

## SECTION 3

# Background

The public transportation, or transit, industry encompasses all public organizations that provide bus, paratransit, light rail, regional rail, subway, ferry, tram, trolley, and demand-response services on a routine basis to passengers in a local or regional area [5, 6]. The U.S. Department of Transportation (USDOT) describes two pertinent sub-sectors—urban transit and bus service and rail transportation, which moves both passengers and cargo. In 2019, the transit workforce comprised an estimated 492,000 individuals employed in urban transit and bus service and an additional 225,000 employed in rail passenger service [7]. In 2017, this workforce was employed by about 6,800 organizations, about a third of which were public transit agencies. In total, 2,229 such agencies received funds and reported information to the National Transit Database (NTD); the remaining organizations were nonprofit demand-response providers [8]. Transit agencies operate in all parts of the U.S. in urban, suburban, and rural areas.

Transit occupations are classified into four core “functional areas”: vehicle operations, vehicle maintenance, non-vehicle maintenance (facilities, track, and road), and central services and administration. In large urban public transit agencies in the U.S., about 60% of jobs are in operations, 20% in vehicle maintenance, and 10% each in the remaining two categories [2].

The transit industry’s workforce varies widely in occupation title, duties, skill requirements, and compensation level. Operations provide routine transit service to the public and interact with customers. Employees may need to problem-solve in stressful situations to keep services running smoothly. Workers in vehicle, facilities, track, and road maintenance must keep transit resources in good condition. Mechanical and technical skills are crucial for these positions. Central services and administration personnel oversee all other operations of the organization, including planning, capital development, customer service, human resources, finance, legal, information technology, marketing, and executive leadership. At smaller agencies, employees might be responsible for several of these areas. Generally, central services jobs are office-based, require higher education, and are higher-paid than other transit jobs [2, 9].

Job characteristics also vary by level. With the exception of central service jobs, many frontline positions have lower education requirements and pay low-to-moderate wages. Successful frontline workers may be eligible for internal promotions to more advanced positions. Frontline operations and maintenance work generally occurs in a depot or in the field. Shifts are scheduled in the evenings, on weekends, or on holidays and may be split into two periods to align with morning and evening rush hours. Many frontline positions require physical

strength and may result in exposure to inclement weather or fuel fumes. Vehicle operators, sales representatives, and security have frequent interaction with customers and the public [2].

Supervisory and senior positions generally offer moderate pay and require some prior field experience and managerial skill. For some posts, higher education or certificates are preferred. Schedules reflect transit operations, sometimes involving evening, weekend, or holiday work. Supervisors oversee frontline work, and technicians use technical expertise to manage transit technologies [2].

Managers, superintendents, and executives are often highly paid, must possess college or advanced degrees, and have extensive knowledge of industry regulations and agency policies. These positions require communication, leadership, managerial, and interpersonal skills. Though agencies prefer candidates with direct industry experience, they may hire individuals from other industries with strong management records or particular skillsets for these positions [2, 10].

All transit jobs share some characteristics. Basic proficiency in math, reading, English, and computers as well as punctuality and communication, interpersonal, and problem-solving skills are required of all workers. Employees must understand local, State, and federal traffic laws, transit regulations, agency policies, and safety precautions. Those who interact with the public must know how to relate to customers, including those with disabilities. Operations and maintenance occupations are highly unionized, although union participation has been falling throughout the decade [11, 12]. Despite this trend, labor unions continue to play a significant role in the management of many transit agencies [2, 13].

## Auxiliary Industries to Transit

Any assessment of the transit industry’s workforce and training needs must also consider related transportation industry subsectors—trucking, air, highway construction and maintenance, rail, taxi, limousine service, and maritime. Nationally, there are nearly 5.4 million transportation jobs in total, of which 1.5 million are in trucking [7].

Across transportation subsectors, many jobs use similar hiring practices, training, and skillsets [2, 14, 15]. The “significant” training for vehicle operators is “work experience in related occupations” to transit [3]. The overlaps in job requirements, training, and operational processes between public transportation and other transportation sectors make it easier for workers to switch between them and to transition to new positions. Workers with prior training, even from a non-transit industry, may be more equipped for professional success and future promotions [9].

Due to the challenge of maneuvering a vehicle, trucking and bus transit operations share a number of characteristics. Employers require that new bus operators possess or obtain a commercial driver license (CDL). This involves passing written and driving examinations; demonstration of being a safe and responsible driver with a clean driving history; knowledge of industry regulations on traffic rules, drugs, and alcohol; and good physical health, vision, and hearing. Employees may undergo formal training in classrooms, simulators, or vehicles to meet these requirements [2, 14]. Truck and bus vehicles share many safety features; workers switching between industries can draw on familiarity with these crucial processes in their new positions. One difference is the need for bus operators to possess customer service skills.

Private bus or rail companies provide services similar to public transit agencies. Ride-hailing services such as taxi, Lyft, or Uber also transport people, and the use of these services is growing [16]. Some of these private transportation providers contract with transit agencies to provide or complement public service [16-18]. APTA also considers transportation planning, design, construction, and financing companies as participants in the transit industry [5].

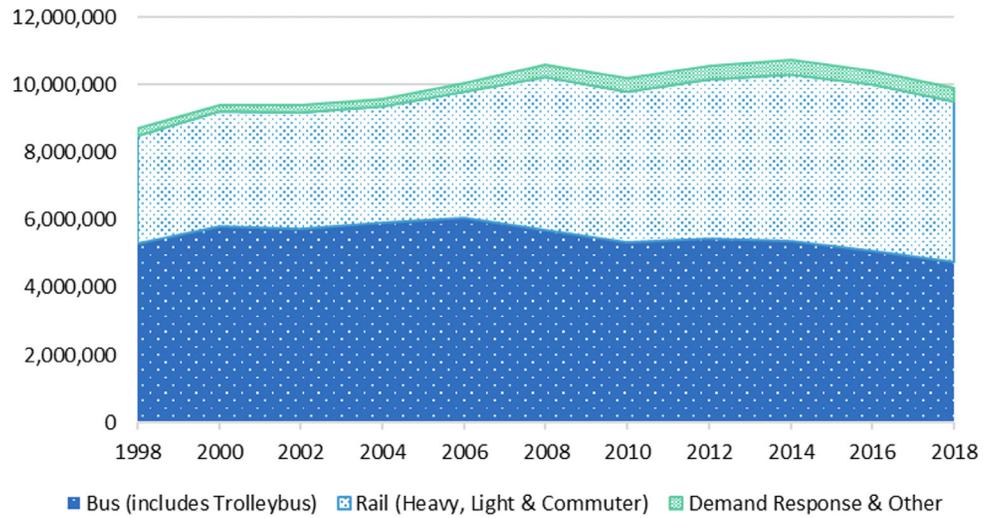
## Future Trends Facing the Industry

Transit agencies must provide service for an increasingly large and diverse client base while facing limited operating budgets and widespread personnel changes. By 2028, about 1.4 million transportation and material moving jobs (the occupational group that includes transit operations personnel) will be open each year. Overall, 10% of openings will come from industry growth, 30% from retirements, and 60% from vacated positions as workers leave for other opportunities [9]. Agencies must retain and train their workforces in an ever-evolving repertoire of skills because an incomplete workforce threatens provision of quality services.

## System Usage and Support

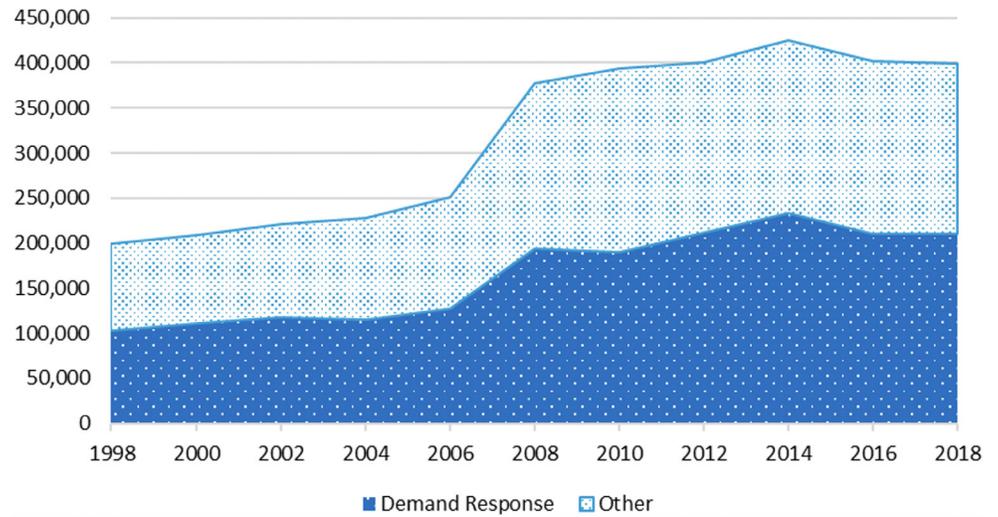
Some industry employment growth emerges from increased use of the system [8]. From 1998 to 2018, national public transit ridership increased by 14%, from 8.7 million to 9.9 million annual riders, after experiencing a high of 10.7 million riders in 2017; users of bus transit, the most commonly used mode of public transportation, decreased slightly (Figure 3-1.). Demand-response and other transit mode ridership also grew substantially, each mode experiencing about a two-fold increase from 1998 to 2018 (Figure 3-2). New ridership on rail modes produced most of the ridership growth during this period, with increases of 45% in heavy rail, 89% in light rail, and 32% in commuter rail (Figure 3-3).

**Figure 3-1**  
*Transit ridership by mode, U.S., 1998–2018*



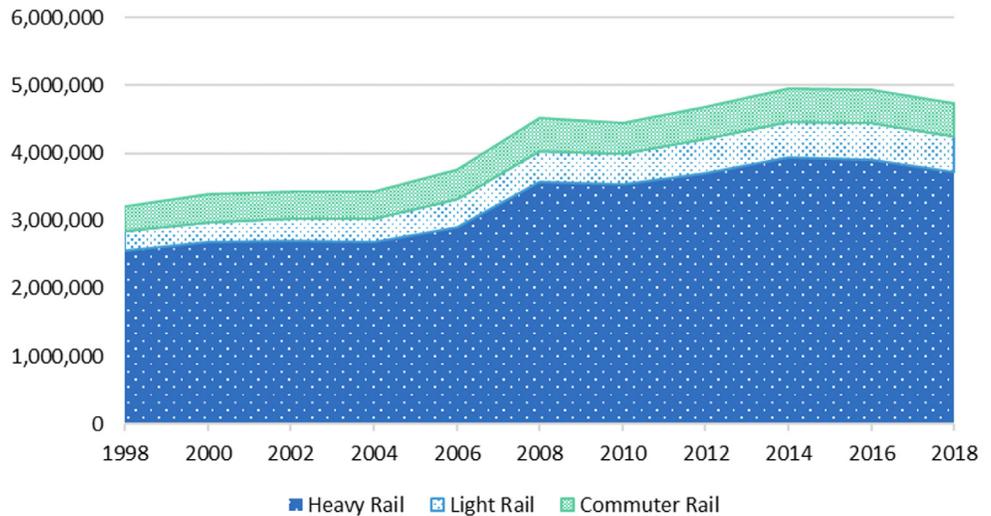
Data source: Hughes-Cromwick, M., *APTA 2019 Public Transportation Fact Book*.

**Figure 3-2**  
*Transit ridership on demand response and other modes, U.S., 1998–2018*



Data source: Hughes-Cromwick, M., *APTA 2019 Public Transportation Fact Book*.

**Figure 3-3**  
 Transit ridership on  
 rail modes, U.S.,  
 1998–2018



Data source: Hughes-Cromwick, M., *APTA 2019 Public Transportation Fact Book*.

Recently, public support for transit has been strong. The 2018 election cycle produced 38 public transit ballot measures, of which 31 (81.5%) passed. Measures included increases in sales, property, and receipt taxes as well as bond referenda to fund public transportation in Arlington County, Virginia; Flagstaff, Arizona; Kansas City, Missouri; the San Francisco Bay Area; and Detroit, Michigan, and surrounding areas [19]. Arlington County’s bond referendum, which will raise \$74.57 million for transportation and transit projects, passed 81% to 17%. Measures in two Florida counties will levy a 1% sales tax for 30 years in support of new and enhanced transit in Broward County (Fort Lauderdale) and other transportation improvements in Hillsborough County (Tampa) [20]. This growth puts pressure on finding the workforce that can provide new and enhanced service.

Overall, new transit technologies lead to changes in job requirements and skills “... from basic manufacturing skills to advanced technical requirements needed to inspect, maintain, and repair” vehicles [21]. Technical changes affect responsibilities for existing occupations as well as new positions. Examples are advances in capital equipment (hybrid-electric propulsion, alternative fuels, and electronic control units) and increased use of technology in operations (intelligent transportation systems, big data, and mobile applications) [13, 21].

## Demographic Impacts

The transit workforce is older than average, particularly among those working in transit and ground passenger transportation (NAICS 485). The median age of these workers is 50.9 years, compared to 44.2 in the transportation and warehousing industry and 42.3 for all workers. In total 40% are age 55 and over, compared to nearly 26% in transportation and warehousing and 24% in

all industries [22]. More than a third of transit employees plan to leave their organization in five years or less, many due to retirement [23]. Moreover, only 17% of the transit workforce working in ground passenger transportation is under age 35, compared to 27% in rail transportation, nearly 32% in transportation and warehousing, and 35% of all workers (Table 3-1) [22].

**Table 3-1**  
Employment Demographics of Rail Transportation, Transit and Ground Passenger Transportation, Transit Industry, Transportation and Warehousing, and All Industries, 2019\*

Household Data Annual Averages	Rail Transportation	Transit and Ground Passenger Transportation	Transit Industry	Transportation and Warehousing	All Industries
Total employment	225,000	492,000	717,000	7,614,000	157,538,000
<b>Age</b>					
<35 yrs	26.7%	17.3%	20.2%	31.5%	35.0%
> 55 yrs	15.1%	40.0%	32.2%	25.9%	23.6%
Median age (yrs)	42.7	50.9	NA	44.2	42.3
<b>Sex and Race/Ethnicity</b>					
Female	7.2%	37.1%	27.7%	24.8%	47.0%
Non-white	17.8%	40.9%	33.7%	31.3%	22.3%

\* Rail Transportation (NAICS 482); Transit and Ground Passenger Transportation (NAICS 485); Transit Industry (NAICS 482 & 485); Transportation and Warehousing (NAICS 48-49)

Sources: U.S. Bureau of Labor Statistics, 2019, Household Data Annual Averages. 18. Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity. <https://www.bls.gov/cps/cpsaat18.htm>; 18b. Employed persons by detailed industry and age. <https://www.bls.gov/cps/cpsaat18b.htm>.

The transit industry has lower female representation than industries nationwide. In the U.S., women represent 47% of all workers but only 37% of those working in ground passenger transportation and 7% of those working in rail transportation (Table 3-1) [7]. Representation among non-white minorities also varies between those working in ground passenger transportation and rail transportation. Whereas non-whites comprise nearly 41% of those working in ground passenger transportation—more than the national share of workers (22%)—they represent only 18% of the rail transportation workforce (Table 3-1) [7].

Moreover, women, minorities, and youths are not equally represented across agencies or within ranks. Lower-paid, lower-rung jobs are disproportionately young and people of color, whereas managerial, technical, and central-services jobs are likely to be white, male, and older [3, 24]. As the older workforce retires, there will be a need to train and educate more diverse workers to take leadership roles [23].

Most future vacancies, like most current jobs, will be frontline operations positions. For the entire transportation industry, there will be 2 openings in maintenance and 21 openings in operations for every opening in central services [3]. Recent data indicate that the highest rate of growth between 2018 and 2028

will be in occupations such as general transportation workers (7.0%), bus drivers<sup>3</sup> (6.1%), vehicle cleaners (6.0%), subway and streetcar operators (5.6%), and first-line supervisors (5.3%). Moreover, there is projected to be an annual average of 63,700 openings for vehicle cleaners, 47,800 openings for first-line supervisors, and 28,400 openings for bus and truck mechanics (Table 3-2) [25].

**Table 3-2** *Employment Projections, Transit and Related Industry Occupations, 2018–2028*

Occupation Titles	Occupation Code	Employment% Change 2018–2028	Occupational Openings 2018–2028 Annual Average
Total, all occupations	00-0000	5.2	19,694,000
<b>Transit Occupations</b>			
Transportation workers, all other	53-6099	7.0	4,400
Transportation inspectors	53-6051	3.8	3,300
Transportation attendants, except flight attendants	53-6061	5.0	3,600
Subway and streetcar operators	53-4041	5.6	1,000
Railroad conductors and yardmasters	53-4031	-0.5	3,700
Railroad brake, signal, and switch operators	53-4021	-0.9	1,200
Locomotive engineers	53-4011	-1.8	2,900
First-line supervisors of transportation and material moving workers, except aircraft cargo handling supervisors	53-1048	5.3	47,800
Dispatchers, except police, fire, and ambulance	43-5032	0.1	19,600
Cleaners of vehicles and equipment	53-7061	6.0	63,700
Bus driver for transit and intercity services	53-3021	6.1	25,000
Bus and truck mechanics and diesel engine specialists	49-3031	4.8	28,400
<b>Related Occupations</b>			
Customer service representatives	43-4051	-1.7	387,600
Office and administrative support workers, all other	43-9199	5.8	28,600
Office clerks	43-9061	-3.5	360,400
Protective service workers	33-9099	4.3	35,400

Data source: U.S. Bureau of Labor Statistics, 2018, Occupational Employment Statistics program. Occupational Projections, <https://data.bls.gov/projections/occupationProj>.

<sup>3</sup> U.S. Bureau of Labor Statistics uses the term “bus drivers”; the public transportation industry uses the term “bus operators.” See: U.S. Bureau of Labor Statistics (2020), *Occupational Outlook Handbook: Bus Drivers*, retrieved from <https://www.bls.gov/ooh/transportation-and-material-moving/bus-drivers.htm>.

## Review of Prior Literature

### Recruitment and Retention Issues

Success in recruiting and retaining workers rests on the relationship between employer and employees; upper management and human resources staff oversee these functions [2]. Recruitment depends on the efforts the employer expends on potential new hires, and retention represents resilience in the employer-employee relationship. The industry struggles to recruit and retain workers for vacant positions, and the predicted increase in transit job vacancies will compound the existing challenge.

Perceptions about transit have an impact on interest in employment in the industry. Many with business, technical, engineering, or other professional interests do not realize that transit offers careers to suit their interests. Others underestimate the ability for career progression in the industry, which can lead successful workers from entry-level to advance to supervisor or managerial positions [2]. The image of transit agencies as white-male-dominated prevents some women and minorities from seeking opportunities [10, 26], although these groups have a greater representation in this industry overall than in many industries [7]. Despite its history of public service to communities, potential applicants may think of transit as ineffective or unnecessary because of negative media coverage as well as personal lack of or bad experiences on transit [9].

Inconsistent hiring practices may deter applicants and increase workforce turnover. For example, narrow advertising of the industry's opportunities limits who applies. Young people may be uninterested in transit career paths because it is largely absent from K–12 career guidance sessions [27]. Increasingly, agencies use online job boards to cull candidates, but this limits applications from people inexperienced with online job searches, in particular older people. Unrealistic or vague descriptions of open positions during hiring may cause new hires to be unprepared for or disappointed in the work [9, 28]. These recruitment practices increase the risk that new workers will leave soon after hiring.

Institutional restrictions handicap recruiting and retention efforts by the transit industry compared to other industries. Tight operating budgets prevent agencies from restructuring compensation and benefits packages to compete with the private sector. Regardless of job type or level, transit generally pays less than jobs with similar requirements and responsibilities in the private sector. Although transit agencies generally provide good benefits (such as health care and retirement packages) to all their full-time employees, the perks offered by the private sector, such as additional vacation or extended parental leave, have been increasingly attractive to those in leadership positions (and those who hope to be) [2, 9]. Stretched budgets also limit funding for workplace development opportunities, such as training, conferences, and networking events [9, 29].

Industry-wide regulations create organizational procedures that can result in limited or repetitive duties for individuals, lack of communication or interaction between departments, and a rigid working environment [2, 9, 30]. Together, these characteristics may push current employees to seek other employment options.

### Skills Gaps

Discrepancies abound in expectations and qualifications of transit workers. These “skills gaps” challenge worker productivity and disrupt agency operations [9]. The growing responsibilities of transit workers as well as organizational oversights widen skills gaps.

Advancing technologies, growing ridership, reliance on computers and data, and the importance of security require new and advanced skills of transit employees. Operations and maintenance workers must understand how to manage new transit vehicles and other physical assets [2, 9]. All employees, particularly frontline employees, need to know how to identify and respond to emergencies [31]. All must adhere to culturally-sensitive practices and to ADA procedures for assisting riders with disabilities [2]. However, applicants possessing these new areas of expertise do not necessarily “exist in sufficient numbers in the existing workforce or in much of its applicant pool” [9].

Each employee possesses specialized knowledge and insightful perspective on how to fulfill his or her duties. Organizations lose this information, resulting in “knowledge loss” if they do not systematically preserve the experiences of veteran workers before they leave. High turnover and retirement rates increase knowledge loss in agency operations [9].

Newly-hired as well as veteran employees benefit from technical, organizational, professional, and/or cultural training at work. This instruction educates new hires in skillsets that are not transferable from previous professional experiences, freshens up mid-career professionals on techniques, and introduces material as occupational responsibilities change [9]. However, training does not always accomplish its stated goals [28]. For example, most transit agencies offer supervisor training, but workers still rate supervisor and leadership training as the highest-priority training needed [23]. The discrepancy suggests that offerings are not frequent or extensive enough; the implication is that this may apply to other industry training, which is supported by the limited budgets available for training.

Chronic underfunding diminishes the adequacy of workforce programs. On average, transit agencies commit less than half of 1% of payroll to training, whereas other industries strive to invest 4-6% of payroll expenditures [13]. Training and development programs are “typically the first victims of budget

cuts;” further, transit organizations may struggle to contract qualified trainers in transit-specific skillsets because they are relatively few [9]. However, “cost-cutting measures” that eliminate trainings are “in direct conflict with the needs of organizations,” since training productivity gains are greater than its costs [9]. Insufficient training thwarts new hires’ acclimating to work and can frustrate seasoned employees who want to improve their professional capacity. In general, without training, employees are less able to solve workplace challenges [9]. Agencies are also under pressure to implement strong training programs to educate new hires ahead of impending mass retirements [23].

Existing development activities often exclude transit workers below the managerial level. For example, most frontline workers are unfamiliar with APTA’s resources, and industry knowledge shared with managers at APTA conferences does not percolate down to lower-level employees [13]. Other sources of institutional support may be similarly underestimated. Organizations target new employees and senior leaders for training resources, “leaving a [serious] gap [of key talent] during the early and prime career years” [9].

The lack of adequate training can decrease productivity, and employee turnover rates can increase when training is not properly targeted to close skills gaps among workers.

### Potential Solutions to Transit Workforce Needs

To maintain service provision, transit agencies need qualified employees and leaders at all workforce levels. This requires recruitment, or “[attracting] a sufficient number of employees with the skills and competencies to effectively carry out their job assignments” and training-integrated retention, where “employees develop their knowledge and skills, both in their current roles and cross-functionally” [9]. Transit agencies and stakeholders have redefined institutional support, formed cross-sectoral partnerships, and sharpened internal policies and procedures to accomplish these goals.

#### *Institutional Support*

Governmental and non-governmental transit institutions must address industry issues and expand their outreach, ensuring that all agencies and workers, regardless of size or level, can use their support.

USDOT and its agencies collaborate with other departments to address workforce issues, most notably with the U.S. Department of Education and the U.S. Department of Labor, which have stakes in preparing the nation’s workforce for quality employment through education and job development. The three departments collaborate to research and shape policy around “job-driven education and workforce development systems [that] provide students, job seekers, and workers with the skills needed” for careers in transit [3].

FTA provides technical assistance and funding to public transit agencies; it also guides industry standards. For example, FTA recently declared that 3% of payroll expenditures should be devoted to training efforts, up from the current industry average of half of 1% [32]. FTA devotes funding to workforce issues. Through the Innovative Public Transportation Frontline Workforce Development program, it has given \$20 million in grants to 47 local transit projects in 21 states since 2011 [33]. The program's goals are to overcome worker shortages; create opportunities for youth, low-income people, women, minorities, and veterans; expand apprenticeship programs; and train in emerging areas such as data analytics, safety and security, and shared transportation services [32]. Many projects are partnerships involving schools, unions, workforce development groups, local government, and the business community.

FTA also funds NTI, established in 1991, which develops, promotes, and delivers training and education programs for the public transit industry. NTI offers courses at locations across the U.S. several times per year in advanced technologies, management development, multimodal transportation planning, transit program management and compliance, and workplace safety and security [34]. In 2016, FTA expanded NTI's annual budget to \$5 million per year, up from \$4.3 million in 2012 [32].

Nonprofit organizations provide transit agencies with guidance and training. APTA advocates for public transportation legislation and provides research, training, and professional opportunities to aid transit agencies [5]. APTA organizes workforce development initiatives including annual conferences for bus and rail professionals; Leadership APTA, a training program for aspiring executives; and the American Public Transportation Foundation scholarship for students pursuing transit-related degrees [23]. CTAA aims to improve transportation for people with limited mobility, including older adults and persons with disabilities, by organizing programs, conducting research, and offering training for professionals [35].

### *Collaborations*

Transit issues concern labor unions, to which many workers belong [13]. Transit agencies can collaborate on “consultation and exchange of ideas [with] labor representatives already working on these issues” [28]. Unions also can connect agencies to more effective training; union-negotiated apprenticeship programs had “higher participation rates for people of color and women and stronger completion rates [overall]” [24]. By tackling issues together, stakeholders avoid repetitive research and policy design. A collaborative approach can also mitigate misunderstandings or conflict between unions and employers, making compromise easier. Involving unions democratizes policy, since labor representatives voice the concerns of transit workers, enabling them to shape their own training and responsibilities. Finally, sharing workforce development

duties with labor unions frees transit officials to address other agency-specific responsibilities [13].

Transit agencies can work with educators to make students aware of transit’s career potential [36] through guidance sessions, presentations, clubs, and curriculum [27]. Two- and four-year colleges can offer older students transit-related curriculum and training as well as applied work such as job shadowing, internships, or apprenticeships [9, 29]. Transit agencies that provide wages, stipends, or scholarships for these positions will engage a diverse group of participants [24].

This collaboration mutually benefits students, agencies, and educational institutions and allows young people to “start building their careers soon after high school” [13]. Adult students looking for second careers can find secure jobs with decent pay and benefits [9]. Regardless of age, applied work experiences bolster student skillsets and professional connections, facilitating transitions to full-time jobs. Once hired, transit’s career ladder structure encourages entry-level employees to advance [9, 13]. Young hires are assets to agencies, as they may work for decades before leaving. Agencies can expand their community engagement through educational efforts. Finally, schools that promote transit connect students to more academic and professional opportunities [27].

Transit agencies can share operational best practices with each other, as they generally do not compete for business but provide similar services. For example, agencies can share organizational duties and materials for trainings. This lessens the time and cost burdens of designing programs, and with more input from experts, training may become more effective. APTA’s national training guideline intends to “improve training quickly and less expensively” for agencies, providing an industry-wide framework with agency-specific context through “value-added activities for each location” [13].

### *Modernizing the Transit Workplace*

Transit agencies should adjust hiring and human resources practices to attract more employees and make the workplace more desirable, such as paying wages that are competitive with other industries [9]. Employers can also improve work-life balance, which “many employees value [over] higher salaries” [29]. Adjustments include floating holidays or vacation buy-back, employee-discounted transit fares, or providing free childcare for employees. When possible, agencies should permit employees to work outside the normal schedule or from home. All workers would benefit from conferences, training, continuing education classes, and networking events paid for by their employers [9].

Agencies should emphasize recognition, freedom, and diversity in job duties and in social relations between employees to combat characterizations of

rigidity or monotony. To bolster motivation, managers should acknowledge good performance through verbal praise, monetary rewards, and/or new responsibilities. Managers might also consider instituting a job rotation program to teach employees about other aspects of the industry while adding variety to the standard workweek [9].

A workforce mixed in age, gender, sexual orientation, and race can build an environment in which every worker feels comfortable and included, consequently raising morale, productivity, and retention. Celebrations of diversity, through cultural events or holidays at the office, can also provide employees with a change from their daily work routine [30]. Mirroring the demographics of the community has other benefits [30]: “Where differences are appreciated and celebrated, workplace conflict was ameliorated and customer satisfaction was increased” [30]. Transit can leverage its high volume of openings to reshape itself into a more diverse workforce at all levels [29].

### *Rebranding Transit’s Image*

A transit agency with a “strong image among current employees and potential outside applicants” will “[attract] qualified candidates” for each job opening [9]. This strengthens its recruitment and retention efforts. Transit agencies should incorporate marketing techniques into daily operations to define their public image as positive and authentic.

Transit can emphasize some of its unique characteristics during the hiring process to attract applicants. Individuals with varied ambitions can find satisfaction in a transit career, as the industry’s complexity necessitates many jobs and responsibilities. Among its workers are operators, maintainers, technicians, law enforcement officers, computer scientists, IT managers, customer service agents, engineers, lawyers, planners, graphic artists, marketing professionals, and business executives. Transit jobs provide decent pay and benefits, including to people without college degrees (which most frontline operations and maintenance jobs do not require). Agencies promote some entry-level workers to supervisory or managerial jobs, which generally call for field experience. Finally, the out-of-office environment, physical nature, or nontraditional schedule of most operations and maintenance jobs create an experience unique from traditional desk jobs [2].

Organizations must publicly promote the advantages of transit for the community, rebranding themselves if necessary. The brand must emphasize that providing transportation for people without other options is vital for the economic and social well-being of the community. It should also inform that transit is democratic, designed for all races, ages, genders, abilities, and socioeconomic statuses. It should highlight the benefits for those not riding transit, including decongested traffic region-wide, freed parking spaces in

business centers, economic development along transit routes, increased job access for workers, and improved air quality. These secondary outcomes may resonate with more of the community than transit service itself [9]. The organization’s brand must accurately represent its services, and any improvements therein advertised must be “real” and “substantive,” as “advertising and public relations by themselves cannot improve image” [28].

Agencies should vary their marketing campaigns to reach more of their communities. Efforts should target groups that may not rely on transit but are willing to try it, such as millennials; contact with these groups may expand ridership as well as job applicants [32]. Television, radio, social media, and print advertisements that feature diverse groups on transit can illustrate its scope of services to those outside the typical client base. Employees can discuss the benefits of transit with the public in schools, at meetings, or at community events. Finally, redesigning the look of vehicles, logos, and other materials will catch the public’s attention and signify positive changes within the agency [9].

### *Expanding Professional Development*

Developing the professional capacity of the workforce makes the agency more resilient to turnover and retirements, cuts long-term recruitment costs, and grants more opportunities to workers. Training and guiding all employees professionally “allows [them] to perform better at their current jobs while simultaneously preparing for potential future workforce challenges” [9].

A transit workforce that is qualified, engaged, and confident in tackling operational challenges depends on sufficient training. Training sharpens employee skills, demonstrates proficiency or expertise, and earns them professional recognition. Implemented periodically, it guards agencies from knowledge loss. To prioritize training, agencies first must offer training opportunities. They can provide incentives to workers to boost participation, although this may be unnecessary; research suggests latent demand for training programs among transit workers [23].

Interactive, team-based, scenario-driven learning in a classroom translates skills to real-world challenges better than computer-based learning [31]. Effective training also includes mentorship, job shadowing, or observational programs in which experienced workers pass on processes and expertise to newer employees [9]. Agencies can support workers who join continuing education or apprenticeship programs at outside institutes, such as community colleges [36]. Certifications also demonstrate proficiency or experience in a professional area. Because professional associations or schools usually develop and offer certifications, they are inexpensive professional development opportunities, costing transit agencies only the fee for the certification [23].

Workers of all job levels and types should be invited to participate in professional development events. Distributing these activities across the workforce—targeting non-central services workers as well as early-to-middle careerists—ensures that it is well-rounded. Further, these opportunities can signify to each worker that she or he has done good work, driving her or him to continue. Management and human resources should conduct semiannual or annual employee performance reviews, which recognize employee good work and give feedback on how to improve their daily contributions. Both praise and constructive criticism guide workers in their daily responsibilities [9].

Transit agencies should grow the number of advanced positions they fill with junior workers. Internal hiring saves the organization time and money because managers can identify potential leaders during standard office operations (including performance reviews), rather than over an extensive recruitment process. Agency workers “already understand the organization, how it functions, and what is important to succeed in the organization” and require less new-start training than external candidates [9]. Finally, the prospect of promotion motivates current employees to excel at work. In preparation for widespread vacancies in the near future, transit agencies should implement succession planning, which systemizes the process by which they identify leadership candidates internally and transition them to new positions [28]. Other agencies formalize professional progression into “career ladder” programs, which define specific pathways from entry to more senior levels in an organization and provide resources to advance [9].

Giving candidates an authentic representation of what the position entails manages their expectations for work, eases their transition, and decreases turnover rates. Realistic job previews (RJPs) describe daily expectations, compensation, and the work environment and also introduce unappealing aspects that employees may face, such as overtime work, stressful interactions with the public, or emergency response. RJPs take form as full-day orientations, documentation, or one-on-one discussion sessions [10].

### *Assessing Programs*

Transit agencies should track their progress in addressing workforce and training needs. Using data-driven techniques, agencies can identify and implement the most effective policies to govern workplace practices and cease inconsequential policies. Assessments should be contextual, methodological, and recurring to “systematically identify” existing and potential operational strategies [9]. Finally, agencies can rehash internal program assessments to illustrate successful operations for grant applications, government funding, or other institutional reviews [21].

Applying performance metrics forces agencies to place value on their operational techniques, which can help them identify which will lead to desired outcomes. The Transit Cooperative Research Program (TCRP) has developed guideline metrics for agency use that measure sustainability of programs, their cost and time to implement, and their return to the organization. Recruitment metrics quantify the cost, time, and number of screened applicants it takes to fill positions, the turnover rate of new hires, and how new employees perform. To assess retention strategies, organizations can measure the rate of employees leaving for other positions as well as the impact of turnover on knowledge loss. Training measures evaluate if existing trainings match the topical learning needs of the workforce and their effectiveness. Tracking the frequency and participation of professional development activities, the share of jobs filled internally, and the involvement of employees in organization decision-making can describe how well the agency provides professional opportunities to its employees [9].

Additionally, agencies should compare all their operations to those of similar agencies. In doing so, organizations can understand the strengths and weaknesses of their own policies and can adjust internal operations to be more suitable. Comparison brings more informed and effective strategies for each agency [13].

Program assessments should detail which data to analyze—and how—before the collection process. Data, which should reflect identified performance metrics, can come from various venues—in-person or phone interviews with experts, observations from facility tours, focus group discussions, worker surveys, or agency databases. Agencies with limited staff capacity may work with other institutes on analyses. For example, the nonprofit Southern California Regional Transit Training Consortium assesses transit-training needs every 2–3 years for regional transit agencies [21].

Data-driven program analysis that occurs every few years depends on incremental, daily data preservation. Agencies must instate systematic collection of information on their own internal processes. Requiring employees to document how they fulfill their occupational duties, in particular before they retire or leave, preserves up-to-date knowledge on daily operations within the organization. Documentation can contribute to program assessments and can inform replicable, rather than ad-hoc, new-worker training. Transit organizations can also integrate technology to enable mass-data collection of their public operations; big data can inform internal management policies [9].

Overall, agencies should implement any changes resulting from program assessment democratically and clearly communicate changes to all stakeholders, including workers and consumers. After the initial assessment, agencies should adjust their performance metrics as well as continue data collection and progress

monitoring. When benchmarking occurs systematically, agencies can depend on it to inform policy [9].

### *Extending the Research*

Although there is considerable research on the topic, there is still much to document and learn about the ongoing and future training needs of the public transportation industry. Some areas of concern not well-documented in the current literature include the skills gaps that exist in the potential and current workforce; the barriers or challenges of recruiting and retaining new staff, especially younger workers; and the types of training that are needed and/or have been successfully undertaken. Moreover, improved training can be achieved only when there is a clear understanding of how the industry is working to better attract younger workers, adjust to disruptive practices such as transportation network companies, and prepare for technological change. This requires asking questions of those working in the public transportation industry about their continuing challenges and successes in securing and maintaining a well-trained workforce.

## Qualitative Findings: Listening Sessions, Focus Groups, and Key Informant Interviews

The research team conducted listening sessions and focus groups of personnel associated with rail, bus, and demand response modes at four national conferences in 2017. In total, 81 individuals participated, representing 77 organizations in 32 states and the District of Columbia. Two listening sessions were held at the NTI Transit Trainers Workshop in Nashville, Tennessee (March 26–28, 2017). These gatherings were open to all attendees and advertised through announcements at the conference and via the conference schedule. The discussions at the listening sessions were a key input into developing a topic guide for our focus groups. Nine focus group sessions were held, three sessions each at the APTA Bus and Paratransit Conference in Reno, Nevada (May 7–10, 2017), the APTA Rail Conference in Baltimore, Maryland (June 11–14, 2017), and the CTAA Expo (June 11–15, 2017) in Detroit, Michigan. Two study team members facilitated the 90-minute sessions. Researchers recruited focus group participants via invitations sent to conference attendees and selected among interested parties to achieve diversity in geographic, demographic, and career experience. Core topics discussed included issues and challenges to training frontline (operators, maintainers, customer service) and other staff, staff recruitment, and employee retention. See Appendix I for the Focus Group Topic Guide.

Following the focus groups, the research team completed a series of key informant telephone interviews with 33 professionals associated with the U.S. public transportation industry, representing 21 organizations in 13 states. Core topics covered in each interview session focused on transit employee skills gaps, strategies undertaken to address said gaps, securing new hires, and employee retention. See Appendix 2 for the Structured Telephone Interview Topic Guide.

During the qualitative data collection efforts, the research team strove to identify and hear from a diversity of voices in the U.S. public transportation industry, including type of organization, position and job area, and geography. Focus group participants and interviewees represented a mix of small to large transit agencies operating in rural, suburban, and urban settings. Several interviews were also conducted with transit unions and education/policy organizations. Almost all transit agency interviewees held senior management roles in their respective organization, several as General Manager/CEO, others functioning in various senior supervisory positions. Agency interviewees represented diverse job areas, such as management, operations, customer service, engineering, maintenance,

procurement, human resources, and workforce development. In addition, more than one-third of interviewees indicated they were directly involved in employee training initiatives.

## Key Themes from Listening Sessions and Focus Groups

Discussion at the listening sessions and focus groups yielded four themes, each affecting the industry’s ability to adequately prepare and maintain a highly qualified workforce:

- **Training** – extent, frequency, challenges to successful implementation, roles of partners, training materials
- **Changing technologies** – electric buses, onboard diagnostics, IP signaling, information technologies and cyber security, scheduling and dispatching software, fare box design
- **Recruitment and hiring** – public perceptions of the public transportation industry, workplace conditions, workforce preparation
- **Retention** – competition for workers, compensation, benefits

These themes informed the stakeholder interviews, which further explored these concepts, and identified skills gaps among public transportation personnel and strategies to address these gaps.

### Training

Most respondents stated that their agency used a well-articulated training program during their onboarding process. However, many critiqued practices that gear training toward new employees and that fail to extend training (beyond that required by regulation or law) to current employees.

Many respondents discussed the challenges of operating vehicles produced by different manufacturers, and several believed that these conditions arise, in part, from FTA procurement regulations. Respondents cited stipulations that make it difficult for agencies to purchase vehicles from a specific manufacturer, resulting in “mixed fleets” at many agencies. Operating such mixed fleets complicates mechanic training and operations, as staff need training on several models produced by different manufacturers. Regulations alone are not the only contributor to an agency operating a range of vehicles, as new demands and technology (as well as other constraints) may dictate the purchase of different model vehicles.

Focus group participants also discussed how training is often tied to the implementation of a new system or new technology or acquisition of new vehicles but less frequently to an overall or consistent training plan. Moreover,

the training received is often provided by manufacturers and can be limited in scope and insufficient to adequately prepare staff or to retrain operators and maintainers to address technology updates.

Respondents also spoke about the challenges of working with external training partners, such as training consultants or institutes, stemming from generic curricula and insufficient tailoring of materials to meet their specific needs. Related

to the quality of training provided by external partners, respondents found that the quality of training provided varied substantially. Concerns were expressed with curricula that were outdated or when instructors drew upon out-of-date personal experience. Several participants discussed using training courses offered by institutes in the past but have since developed their own training programs to better meet their needs. When asked about the best delivery methods for training, participants agreed that the manner of delivery (via classroom, on-the-job, role-play, webinar, etc.) was not nearly as important as the quality and timeliness of the material.

Difficult, and perhaps intractable, challenges to training come from resource and time limitations, as agencies often cannot afford either to lose productive hours during the day or to pay for additional training hours. Participants discussed that the training topics covered and how frequently they offered training were often dictated by outside entities (state, federal, insurers) and usually tied to funding. Participants stated concerns about insufficient funding to meet their training needs. But they also explained that budget allocations for training could depend upon the will and perseverance of supervisors and management personnel. They recognized that with good leadership, agencies can negotiate substantial training budgets when the value of training is communicated to funding organizations.

Participants also shared stories about implementing training for large groups of staff. They related challenges due to the cost and scheduling difficulties of having staff at training rather than operating vehicles, coordination across service areas, and consistency in training language and approach.

Participants were looking for ways to improve training for their staff. Some participants—especially those from smaller agencies—shared difficulties in identifying high-quality and affordable training opportunities and their desire

*We just installed new radios in all of our buses. We've got about 250 buses, so we've got over 300 operators; that training we did with groups of 5. It's a pretty good group of people where you can really ask questions. We did that for about a month prior to installing all of the new radios, and then once we got the radios up, we had every employee practice calling Dispatch. It takes a long time, and it's a lot of effort. We haven't had an issue, and that's why we practiced.*

*– Focus group participant,  
APTA Bus and Paratransit Conference*

for better information about opportunities to train their staff. Most focus group participants identified the availability and quality of training materials as a particular concern. Those working in bus operations identified a lack of training materials for maintainers to use when learning to repair onboard computer systems. One concern was that inadequately trained maintainers are ill-equipped to properly service vehicles, which has operational impacts and may result in a need for earlier equipment replacement. Participants working for bus and community transportation/paratransit providers also described needing better training and materials that update operators on FTA regulations and on sensitivity, ADA, and diversity issues as well as materials offered in languages other than English. Focus group participants also raised a concern that transit agencies lack a good understanding of the training needs of transit data analysts.

### Changing Technologies

Changing technologies pose their own set of challenges to the public transportation industry, affecting the skill sets of those working in many roles including dispatchers, operators, and maintainers (among bus and community transportation providers); track engineers, rail communications staff, and other positions (among rail providers); and cyber-security, data analytics, and management across the entire industry.

Changing vehicle technologies (fuels, navigation, safety enhancements, global positioning system [GPS] vehicle tracking, climate controls, fare collection, etc.) all require that maintainers acquire new skills to remain up-to-date. Participants were concerned that ongoing changes in technologies will affect bus operators nearly as much as maintainers, as the knowledge needed to understand new dashboards and drive the bus safely will be different. Participants were also concerned about perceived declining interpersonal skills among dispatchers that has coincided with the rise of customer-facing online ride scheduling apps as well as a growing reliance on scheduling software within agencies.

Participants working in the rail industry reported a failure to consistently update training when new systems come online. This has led to situations where track engineers and rail

*The problem we have is a lot of folks have come up through the ranks, and the railroad technology which is still predominant because it was deployed and is out there working. You don't replace it if it is working, technologies from the 30s. You started to see new stuff being put on top. You've got a CAN [controller area network] bus on the vehicle. It is a computer bus that connects all the components, and the guys that learned to repair cars and trucks with a black lead-in and a red lead with a light bulb, that doesn't work anymore. Getting people to make that technological jump is where we have a huge problem.*

– Focus group participant,  
APTA Rail Conference

communications staff lack the knowledge to operate and/or repair more modern systems.

Most participants reported that their agencies had not explored the effects of advanced technologies, such as autonomous or connected vehicles, upon operations or on future training needs. Many respondents in our survey provided open-ended responses expressing concerns with how to integrate battery electric buses into fleets, which require new training for operators, maintainers, and management, given the large changes in all areas that this will entail.

### Recruitment and Hiring

Many focus group participants believed that in the U.S., careers in the transit industry are largely invisible and that the industry is not seen as providing a desirable career path for the nation’s best and brightest. Specifically, participants said that their agencies have found it challenging to engage potential job candidates who are qualified and committed to and interested in working in the public transportation industry. They explored how this perception of the industry affects their ability to recruit and hire skilled workers at all levels (frontline, supervisory, and management) and strategies to overcome these challenges.

One challenge discussed by focus group participants is the around-the-clock nature of public transportation provision and how, to a large section of the workforce, this limits the appeal of working in the industry. Moreover, participants noted that funding constraints often restrict an agency’s ability to negotiate higher pay with new hires.

*We don’t have a lot of turnovers in our full-time [workforce]. We have a lot of turnovers in our part-time [workforce] but that’s mainly because of a lot of part-time operators. We have mandatory Saturdays and Sundays, so they say “yes,” I’d love to work Saturdays and Sundays. And then they think about it— “Oh my, now I’m working seven days a week because I have a full-time job.” So they can’t do mandatory Saturdays. That’s when it becomes overwhelming, and you’ve got this revolving door. Usually once their need is met, you lose them and you’ve got to start all over again.*

– Focus group participant,  
CTAA Expo

Agencies are interested in hiring candidates who seek to make transit a career. Thus, some agencies have adopted strategies in the interview process to weed out candidates who are merely seeking financial compensation, i.e., “looking for a quick paycheck,” and instead specifically ask job candidates about long-term career interest during the hiring process. For some agencies, this has meant greater recruitment success by hiring those who are changing careers or who

have been in the workforce for a number of years. Among these workers, the prospect of steady employment and good benefits is a significant attraction.

Moreover, when seeking candidates for many entry-level and/or public-facing job roles, participants reported a shift in hiring practices that places a higher priority on associated skill sets (e.g., customer service, computer technology, etc.) than on previous public transportation industry experience. For example, when hiring new bus operators, participants reported that agencies have greater success when recruiting people with high-quality customer service backgrounds than among those who hold CDLs and were perhaps employed as truck drivers (which can be a more solitary occupation).

*Sometimes you bring people in that may have CDLs but the problem is, they're [also] bringing in some baggage. When they bring that baggage in, you get to see what it is and if you're going to be able to deal with it during the training period. They have to be able to show empathy.*

—Focus group participant,  
CTAA Expo

Specifically looking at hiring and recruitment demands within the rail industry, participants reported significant challenges when seeking workers with the experience, or the potential, to work in track signaling and signal communications. These workers can come from either technical or engineering backgrounds and have appropriate training to begin working in the field. Additionally, many participants noted the difficulty of recruiting cyber-security staff since individuals with this skillset can work in nearly any private industry and receive significantly higher salaries.

Participants in all groups felt a need for a national campaign that promotes all positions in transit, including vehicle operators and maintainers as well as procurement officers and data analysts.

## Retention

Focus group participants expressed their concerns about retention of qualified staff. Many employees see training as a way of obtaining skills for promotion, which encourages them to remain with an agency. Thus, training can be a strategy for staff retention. However, if skills are improved, staff may also seek opportunities elsewhere.

One common example was that skilled maintenance technicians are capable of shifting to the private sector, e.g., automobile dealerships. Some of the main advantages are that work hours are standard eight-hour days and salaries may be higher. Investment in training maintenance technicians may often simply improve their ability to work elsewhere.

Participants observed that in agencies that provide both bus and rail services, bus operators frequently move into higher-paid rail positions. This leaves bus operations with less experienced personnel and rail divisions with staff with strong but underutilized customer service skills. The participants recognized that full-time employees are more likely to stay in their positions than those holding part-time positions. Participants also confirmed that younger staff will stay in positions for shorter periods.

One agency shared information on its use of an 18-month rotational program that allows employees to move within divisions of the same agency, increasing their knowledge of how the agency works while introducing them to other positions and areas of the agency.

## Key Themes from Informant Interviews: Skills Gaps and Strategies to Address Them

The vast majority of interviewees and other participants reported that both soft (e.g., communication, management) and hard (e.g., technical, technological, maintenance) skills gaps exist across departments throughout the transit industry. Many participants lamented a lack of staff with proficient skills in communication (oral and written), customer service, management/ leadership, teamwork, conflict resolution/ de-escalation, and overall professionalism.

Deficiencies in soft skills were most typically observed in younger employees and among those transitioning from technical positions to managerial or supervisory positions. Regarding the latter group, several participants reported that most agencies typically do not invest in creating a defined onboarding process for those moving within the agency into advanced positions.

*What happens is people start as bus operators, and then they advance. The way the pay structure is set up, rail operators get better, higher pay rates than bus operators, and our most experienced, best-trained bus operators leave the bus and become a rail operator where they are enclosed in a cabin and have no interaction at all with customers, and it's a huge loss.*

*– Focus group participant,  
APTA Bus and Paratransit Conference*

Many framed hard skills gaps as a serious impediment, adversely affecting agency operations. Certain positions, such as many in maintenance, have dramatically changed in recent years, requiring more technical capabilities. These mechanics and technicians, and to some extent operators themselves, must be able to operate electronic diagnostic equipment and increasingly more technical systems on vehicles. An example discussed at length in one focus group was the fare box,

which requires technical skills to maintain and operate. Maintenance staff need to be skilled in using tools, including laptop computers, to resolve vehicle issues related to the automatic vehicle locator, smart card reader, passenger counter, fare box, electronic pollution controls, vehicle engines, and other components. In addition, many participants reported that technicians are required to serve a mixed fleet, often from multiple manufacturers, requiring knowledge of different technologies. Participants from agencies operating rail service expressed specific frustration in securing personnel with the requisite hard skills for highly technical positions such as signal, track, and train control engineers.

*It used to be that every bus was a diesel bus. Now we have hybrid diesel, electric, CNG; it might be all electric, battery electric, fuel cell. So even if you are buying from the same manufacturer or if you are changing manufacturers, it can be challenging [to stay up-to-date].*

*– Focus group participant,  
APTA Bus and Paratransit Conference*

Hard skills gaps related to emerging and newer technologies, including electric and autonomous vehicles, pose a new concern. Although agencies rarely acknowledged the latter as an immediate concern, many identified a current need for staff to properly maintain, service, and operate battery electric vehicle fleets. An agency converting to a full electric fleet explained that electric vehicles require a completely different set of skills than gasoline or diesel vehicles. They noted that battery electric buses are “a series of computers on wheels” that require technicians with computer and diagnostic skills. Another agency commented that it has sought out new hires with computer programming and electrical engineering skills to service its electric fleet and that operators must learn new driving styles to manage and conserve battery power.

Interviewees also discussed the need for skilled Information Technology (IT) employees as well as those with analytical skills. Participants identified the difficulty in securing IT staff as primarily due to agency inability to offer wage compensation on par with the private sector. The industry, however, needs professionals with expertise in various software packages (e.g., for scheduling and dispatching). Finally, the industry also requires staff with other analytical skills to scrutinize agency transportation data. Participants discussed collecting data on many facets of their operations, including miles traveled, revenue streams, fare collection, and via dispatching software, but regretted their limited opportunity to use this information, as current staff lack analytical capabilities.

Participants frequently emphasized that to reduce skills gaps, agency leadership must first recognize existing gaps and then determine prioritization strategies. What constitutes “success” in this regard is a critical discussion that must be had among agency senior staff. As one participant proposed, transit agencies

have two primary options to address skills gaps and assemble their workforce—“buy,” i.e., hire new experienced employees, or “build,” i.e., develop needed competencies internally.

### Hire New Talent

To successfully attract the appropriate candidate pool, agencies must communicate their needs clearly and focus on increasing awareness and promotion of career pathways in the transit industry.

### *Next Generation Initiatives*

Interviewees agreed that the public transportation industry must more proactively generate awareness of transit career opportunities among the nation’s youth. To achieve this goal, agencies must prioritize outreach to primary, secondary, and higher education institutions. Participants stressed that a successful and sustained working relationship with the education sector will allow transit agencies to communicate to educators how collaborative efforts can translate into career paths for students.

One agency developed a summer program for high school students designed to introduce them to transportation careers and discussed plans for their soon-to-be-opened transportation middle and high school. A project partner, a technical college, creates awareness through their youth program, which offers students hands-on project-based learning introducing them to transit. Other agencies noted partnering with educational institutions on various initiatives to create awareness for transit careers and for recruitment. Overall, the value of early exposure to the industry cannot be overemphasized.

The overall lack of post-secondary coursework offering a foundational understanding of public transportation systems and operations was cited as a recruitment hindrance and a significant contributor to skill deficits among new hires. The value of creating exposure to and building understanding of public transit among college students in diverse disciplines, in addition to the traditional field of engineering, was emphasized.

Although many senior staff interviewed acknowledged the significant contributions younger staff offer, several expressed frustrations in areas such as managing their expectations regarding the time frame for career progression, work/life balance issues, and their preferred communication style (text/email vs. in-person). Some focus group participants felt that the new generation lacked some basic workplace skills, such as punctuality and oral communication.

Promising examples of post-secondary initiatives include courses developed through University Transportation Centers. For example, the Southeastern Transportation Research, Innovation, Development, and Education Center

(STRIDE) provided funding for development of graduate-level course entitled [Public Transit Planning and Operations](#). Course modules are available free online and are being used by other post-secondary institutions. An older FTA funded effort to create a national transit curriculum for undergraduate/graduate courses was also mentioned. However, although several modules were developed and made available via the APTA website, funding was limited to curriculum development and the program was not piloted.

### *Determine and Communicate Agency Needs*

Establishing and clearly communicating agency hiring needs is vital to attracting appropriate job candidates. To accomplish this goal, agencies must first be aware of their human capital needs and then effectively communicate those needs to an external audience of job seekers without using agency jargon, which can serve as a deterrent to job seekers unfamiliar with the industry. One agency interviewed is working to clarify job descriptions to ensure accuracy in listed qualifications and requirements to communicate more effectively to external audiences. Another respondent offered that as part of a comprehensive operations analysis, they are reviewing their job titles and associated descriptions to specify step-by-step career ladders outlining pathways to advancement and to ensure the recruitment of skilled personnel. The importance of undertaking activities like these cannot be overstated. When recruiting military veterans, one agency learned that veterans do not recognize their qualifications in the job descriptions used and thus do not pursue employment with the agency. To address this barrier, the agency is reviewing the skills/competencies needed for positions, seeking to define several core competencies for each position. The agency hopes this effort will result in more successful recruitment of individuals with relevant experience outside the transit industry.

### *Seek Diversity*

Current recruitment efforts will determine the next generation of the transit industry workforce, whose leaders will steer the industry through the 21st century. That said, many interviewees proposed that efforts should be directed to recruiting a workforce that reflects the nation's diversity—including but not limited to persons from varying economic, racial, and ethnic backgrounds as well as those of diverse age and gender. In discussing this issue, one interviewee offered that agencies and recruiters should reach beyond their immediate professional and social network when seeking new hires.

A current effort in California, the Workforce Initiative Now – Los Angeles (WIN-LA) program, is creating career pathways into the transportation industry for economically-disadvantaged populations in Los Angeles County including women, youth in foster care, second-chance populations, homeless persons, and veterans. In terms of diversity, various agencies specifically mentioned targeting

recruitment activities to veterans, noting many former military personnel have technical skill backgrounds and all have experience working in a very structured, hierarchical organization, similar to many transit agencies. Regarding age diversity, many mentioned new recruits for bus operator and other positions in recent years are often middle-aged persons seeking to pursue a second or third career with attractive benefit packages. Building on this development, agencies are recognizing that they should more holistically expand their recruitment activities.

### *Recruitment Challenges and Successes*

Recruitment challenges are also more commonly encountered among certain positions due to key factors related primarily to competitive salary issues and work hours. The positions most discussed as difficult to recruit include bus operators, mechanics/technicians, rail signal maintainers, traction power maintainers, track maintainers, rail communications and facilities staff, and other employees with technical skills, including IT and systems engineering.

Many participants discussed the challenges of recruiting younger workers. Millennials were perceived as desiring higher starting pay scales and more typical, as well as flexible, work hours—difficult obstacles to surmount due to the industry’s seniority-based system.

Transit agencies often offer robust benefit packages, but this compensation is less appealing to many younger workers. On the positive side, some shared they have successfully attracted younger workers by marketing their green technologies, such as electric vehicles, as well as focusing on the positive community impacts of transit. Finally, agency location can play a role in recruitment success. If an agency is located in a region where there are various industries requiring similar technical skills as transit (e.g., freight trucking, auto dealerships) but perhaps offering more competitive salaries and/or more desirable work schedules, agencies will face increased recruitment challenges.

*I started [at my agency] about three months ago and I had a staff of 10 engineers, and within two weeks of starting there, I lost four of my engineers—to retirement, to other companies stealing them away, whatever. Now I need to fill four very high-paying engineering jobs. And there are not people out there. There is no college that offers anything, other than Wisconsin, in engineering for rail systems, a track engineer. Right now, I have a need for a track engineer—they are gold, platinum, they just don’t exist. [There is] a program where they will take kids fresh out of school and assign them to an engineer, and they will spend two years in my organization. I will send them to the signaling department for six months for a formalized training program. At the end of two years, when they are done, they are gone. [Private sector companies] steal them, they double the salary.*

– Focus group participant,  
APTA Rail Conference

Agencies recruited successfully by seeking candidates from local technical and community schools/colleges, area universities, university-run transit systems, from bus manufacturers, and through school job fairs. The benefit of listing job postings and applications online was cited as a successful approach for attracting younger and more tech-savvy applicants. Several noted successes recruiting new bus operators without CDLs and covering the CDL training costs. Finally, agency internship programs can also serve as a recruitment pipeline.

### Build Competencies Internally

When an agency focuses attention on building competencies internally, they can more successfully promote from within, a commonly-cited best practice. For agencies seeking to develop their needed competencies internally, training and partnerships were the core strategies mentioned to achieve this goal. Several agencies noted the value of offering mentoring and employee apprenticeship/ internship opportunities as internal strategies to address skills gaps. For example, one agency shared that it offers maintenance managers and operation supervisors mentoring programs designed to help proactively address soft skills gaps. This agency also recently began an internship program for employees interested in becoming diesel mechanics in which the agency covers tuition costs and salary during classroom instruction time. Another agency offers a mechanics apprentice program that allows new mechanic hires to work side-by-side with a seasoned mechanic following their initial training.

*It is extraordinarily difficult to keep up when you have a small staff dedicated to provision of service as opposed to provision of training to provide that service. So you're always running up that down escalator, and it can get extremely difficult.*

*—Focus group participant,  
CTAA Expo*

Due to the increasingly complex and ever-changing industry technologies, continual education and training are required throughout the lifecycle of any transit industry career. Staff technical training needs can vary greatly if an agency uses a variety of vehicle technologies (e.g., diesel, electric) as well as different manufacturers. Participants reported that employee training is vital for both skill acquisition and skill retention and the sentiment “training is a standard part of agency culture” came up frequently. There was wide recognition that internal and external training builds staff competencies, and often contributes to a positive work environment and staff retention efforts.

### Training Offered

All participants stated that their agencies offered some form of employee training, either internally and/or externally, for a mix of frontline (e.g., operators), technical, and professional staff. In addition to technically-driven training

targeted to mechanics, technicians, and to a degree bus operators, other types of instruction offered varied widely and included: team building, leadership, customer service, project management, and communication. Some training offered is mandatory, some is voluntary. Seen as necessary for many positions within the industry were customer service skills, especially for bus operators, given their level of interaction with customers. Many interviewees also emphasized the importance of leadership training to develop the next generation of senior management.

Whereas many trainings are offered in-house, agencies interviewed discussed external training opportunities as well. External sources for training included statewide and regional transit associations, vehicle manufacturers and other vendors, nationwide nonprofit entities such as APTA and the Eno Center for Transportation, and NTI. Several interviewees specifically acknowledged the positive impact trainings such as APTA's Emerging Leaders Program and Leadership APTA have had on participating staff. Interviewees also noted that national training initiatives typically require the agency to supplement the course content with more in-depth, customized information directly applicable to their agency.

### *Training Challenges*

A transit union interviewee stated that a lack of training and retraining to address both hard and soft skills gaps is the most significant workforce challenge facing the transit industry, noting that although this concern is industry-wide, smaller agencies tend to have the most difficulty offering training due to time, financial, and staff constraints. Agencies that do not have the internal capability to develop needed training must find appropriate and cost-effective training options.

Even though various agencies discussed the training component of vehicle and equipment procurement, participants widely acknowledged that agencies cannot rely on manufacturer and vendor training to meet needs, as those options are very limited in scope and focus solely on that vendor's equipment. Several also noted a common procurement practice that permits manufacturers to provide training 60–90 days after a vehicle is in revenue service, which can be both ill-timed and insufficient.

Another training challenge is that “one size does not fit all,” and agencies often struggle to determine the most appropriate training for diverse staff. Agencies also recognize that each employee's aptitude for acquiring new and/or advanced skills can vary greatly and factor this in when planning training. Employee buy-in is also critical for training success. Although most interviewees shared that their employee base was generally supportive of training efforts, some noted negative views and emphasized that trainers play a critical role in securing this buy-in; as such, trainers must convey professionalism, be well-trained themselves, and adeptly communicate training benefits.

### *Training Innovation*

Participants shared a variety of strategies and highlighted examples of innovative training approaches. To offset training costs, agencies recommended using grant funds for training when possible. One agency supported training efforts through its recent FTA bus improvement grant and others mentioned using Rural Transit Assistance Program (RTAP) funds. Agencies noted the cost-effectiveness of pursuing “train-the-trainer” initiatives, in which targeted individuals throughout the agency receive training and then teach these skills to others in their respective departments and teams. Agencies acquire training materials from other transit agencies, insurance providers, and through external courses and frequently customize materials to meet their unique needs in a cost-effective manner.

Respondents also noted the value in seeking staff training beyond the public transportation industry. One agency noted sending staff to a county leadership program led by the local chamber of commerce, through which staff acquired increased community awareness that helped them become more responsive to local needs. The training also offered a networking opportunity with local elected officials. One interviewee cited partnering with the Occupational Safety and Health Administration (OSHA) for safety training, which allowed a fresh perspective on safety issues. Other training partners cited include state departments of labor and health and human services.

Incentivizing training is another innovative approach to consider. One agency integrates Automotive Service Excellence (ASE) testing for bus technicians called Transit Bus Certification tests (H1-H8) into its compensation policy. Technicians receive a \$0.25 hourly wage increase for each test they pass and an additional increase for passing all eight tests. In addition, although the limitations of manufacturer/vendor training were widely reported, one agency built their mechanics’ technical skills by contracting with a vendor that performs repairs on-site with the assistance of agency mechanics, allowing them to gain skills through the shadowing process.

Many cited the dominance of in-person and, in some cases, field instruction, but some also mentioned online training modules as a cost-effective approach to reach more staff. One rural agency recognized its training needs in human resources, financial management, and supervisory skills and developed an e-learning center, available to other interested agencies. Some agencies discussed the benefits of using learning management systems and other self-paced customized e learning opportunities; others noted the value of interactive role-playing for training staff.

Finally, several agencies cited the value of providing cross-training opportunities to new and long-term personnel as a means to achieving a more thorough understanding of the entire agency, its mission, and its diverse staff roles. One

agency successfully implemented a team-building program with job shadowing of personnel from different departments. Participants learned firsthand about other roles and departments within the agency, which fostered peer empathy and comradery and increased their overall understanding of the agency.

### The Power of Partnerships

Most agencies discussed the value of partnerships for addressing skills gaps and increasing industry awareness. Generally, partnerships are with the education sector, including four-year universities and community, vocational, and trade schools. Internal agency programs such as college internships offer an opportunity to teach desired skills and impart knowledge of agency operations, policies, and practices, effectively creating a primed pipeline of potential new hires. In addition, educational partnerships have resulted in guest lectures at colleges by agency staff and agency funding for developing training programs, certificate programs, and curricula for agency staff.

A respondent from one large urban agency discussed partnering with a local county technology college for a particularly successful, innovative, and longstanding agency-educational collaboration. Over several decades, the agency and the college have worked to establish an in-house training department, develop an initiative to upskill incumbent workers, create and standardize training curricula, provide training, foster knowledge management, institute a rail system technology associate's degree, and ensure the college's programs address competencies needed by the agency. A standing Memorandum of Understanding guides this relationship, which demonstrates how strong partnerships beyond the public transportation industry can positively contribute to employee and agency growth and success. A respondent from another agency discussed its partnership with multiple area colleges and technical schools, allowing it to draw upon these connections for recruitment of skilled maintenance technicians.

Other partners also provide a way to build competencies and address skills gaps. Collaborating with local transit agencies through a statewide maintenance alliance affords an agency the opportunity to share best practices and knowledge and to learn from industry vendors. This alliance functions as a "train-the-trainer" program and facilitates joint procurement activities. Others mentioned partnering with their transit union on initiatives including leadership development and mechanic apprentice programs. One agency partnered with a vehicle manufacturer to fund a community college mechanic's scholarship, and another worked with a local employment-focused nonprofit to create a customized bus operator training program.

Agencies have formed many partnerships with educational and other institutions, thus offering the ability for existing staff training and can serve as a pipeline for new staff.

## Strategies Used to Retain Staff

Interviewees shared both successes and challenges in retaining their workforce. Challenges focused on salary, benefits, and work hours, i.e., the 24/7 nature of transit. Some also mentioned long-term effects related to physical and mental injury as well as on-the-job procedural fairness issues (dispute resolution).

Frequently-cited strategies/practices participants reported as contributing to retention include offering competitive salaries, strong benefits packages (e.g., health, retirement), promoting from within, and supporting staff continuing education goals (e.g., offering tuition assistance). One transit union interviewee reported that agencies offering strong benefits lose employees less frequently than those offering fewer benefits.

One agency's innovative approach is to "invest in employee success." This agency engages employees in decision-making processes to nurture their growth. Another explained that successful engagement of staff in problem-solving increased their understanding of the vital role the agency plays in the community. The agency created a continuous improvement team staffed by employees from all departments who work collectively to resolve operations, finance, and human resources issues. One agency supports retention by offering career coaching to interested staff.

Still others indicated that investing in employees should include offering opportunities to broaden their knowledge of the public transportation industry, interacting with peers within/beyond their agency, and fostering their professional development by participation in training and conferences available through the Transportation Safety Institute, APTA, NTI, the Eno Center for Transportation, and others. Agencies also cited mentoring opportunities with senior level staff to support employee growth.

The importance of developing a positive, supportive work environment/agency culture is a highly successful strategy to retain employees. Developing regular internal communications with all employees can help realize that desired culture. Communicating regularly with employees about how their work contributes to the mobility and success of the community is important to emphasize employee value and the significance of being part of something larger than themselves. Employee recognition for exemplary customer service helps foster a positive work culture. Commitment to employee well-being also contributes to higher retention rates. One agency created an employee onsite primary health wellness clinic that has greatly contributed to positive morale and retention.

New staff in bus operator and maintenance technician positions typically are assigned to less desirable shifts (i.e., night shifts and split-shifts). Agencies recognize that if operators can successfully adjust to the demands of the

job during their first three years of employment, they usually remain in the industry. Operator wage scales typically escalate at the three-year mark and more desirable work shifts become available. Overall, agencies acknowledged the importance of competitive wages and strong benefits packages as retention strategies for these employee positions as well as the need to communicate to staff what the longer-term opportunities are. Another agency successfully implemented a mentoring program to support first-year operators, featuring trainer ride-alongs and in-person reviews.

Finally, many participants discussed younger worker retention challenges, often noting that younger staff tend to seek work conditions that encourage independence, offer flexible schedules, and provide opportunities to contribute to the larger community, with benefit packages less vital to their retention. Several early career professional interviewees affirmed those observations and added that a clear career progression/pathway and the ability to pursue professional development greatly influence younger employee retention.

## Key Takeaways

The robust and diverse interviews undertaken for this study revealed many common findings, themes, and recommendations related to the topics of transit industry employee skills gaps, recruitment, training, and retention. Notably, regardless of agency size, geographic location, or modes offered, most interviewees had many of the same workforce concerns and challenges. The interviews largely confirmed the findings from the focus groups and provided more detail on strategies to overcome skill deficits as well as approaches to address these challenges that could be replicated nationwide.

Following are key takeaway points related to the four core topic areas covered in each interview.

### Skills Gaps

Both soft and hard skills gaps exist across the transit agency. Frequently-cited soft skills gaps focused on communication, management/leadership, customer service, and conflict resolution. Interviewees discussed hard skills gaps in terms of maintenance employees and technicians as well as new and emerging technologies such as electric vehicles. They presented training and partnerships as approaches to addressing skills gaps. Agencies recognized the advantages of partnering with the education sector to create training programs and curricula and the benefits of partnering with other transit agencies, transit unions, and nonprofits to build competencies and address skills gaps.

## Recruitment

The career pathways and opportunities the transit industry offers are many and diverse, but most interviewees discussed limited job seeker awareness of these opportunities. To enhance recruitment, interviewees shared efforts to more effectively find and communicate their needs to job seekers from diverse educational disciplines and backgrounds. Undertaking activities such as reviewing skills/ competencies needed for positions and defining core competencies for each position are aiding in successful recruitment from inside and outside the industry. Agencies achieving recruitment success also discussed reaching beyond their immediate professional and social network to develop a diverse workforce that more closely reflects the nation and communities they serve.

## Training

Continually and rapidly changing industry technologies call for increased and adaptable training for both skill acquisition and retention. Although all interviewee agencies offer internal and/or external training, they acknowledged challenges including time, financial, and staff constraints. Agencies cited insufficient manufacturer/vendor trainings, varying employee aptitude, and weak support for training can limit success. Participants shared many positive and creative training practices that include non-public transportation industry training opportunities, training incentives, online and train-the-trainer teaching modules, and agency-wide cross-training.

## Retention

Challenges discussed focused on salary and scheduling. Agencies that are successfully addressing staff retention challenges discussed efforts to support continuing education and professional development goals, improve internal communications, and seek employee contribution in decision-making and agency problem-solving. Many stressed developing a supportive and positive work culture guided by a core mission to serve the community as a critical determinant in employee retention.

## SECTION 5

# Survey Findings

## Introduction

Findings from the qualitative analysis provide a broad picture of the workforce issues facing the transit industry, ranging from which skills are deficient, difficulties with recruitment and retention, and a sense of what training needs are required. To further drill down on these issues, the research team developed a detailed survey questionnaire focused on obtaining more information on specific training needs identified by transit agency staff.

## Survey and Data Collection

The original objective was to collect the most representative sample of transit agency staff possible to better understand the full spectrum of staffing issues facing the industry. Ideally, the survey would obtain responses from all levels of job classifications and level of experience in the industry. Survey research firms often have this type of information for selected industries, but it was found that these firms did not have adequate samples of transit agency staff.

The research team opted for a convenience sampling approach to obtain sufficient data, conducting a survey of transit agency staff based on email addresses provided by NTI and APTA. NTI provided a list of 10,887 email addresses, and APTA's list was based on lists specific to committees within the organization.<sup>4</sup> The total APTA sample was 1,796 unique email addresses. The two lists were cross-checked, removing any duplicates from the APTA sample. The team used a full-contact protocol for the NTI sample, but APTA restricted how many contact requests researchers could initiate (see Appendix 4 for the text of contact emails used in the survey protocol). This led to lower response rates among the APTA sample. Table 5-1 shows the full distribution schedule (including a small pre-test with a sample of 103 possible respondents). Table 5-2 shows the response rates.

---

<sup>4</sup> APTA shared email addresses of members of the following committees and subcommittees (denoted by "S"): Bus and Paratransit CEOs, Bus Operations, Bus Technical Maintenance, Commuter Rail CEOs, Commuter Rail, Diversity and Inclusion, Education and Career Awareness (S); Emerging Leaders, International Bus Rodeo, International Rail Rodeo, Labor and Employer Relations, Leadership APTA, Mid-Sized Operations, Organizational Development (S), Procurement and Materials Management, Public Transportation CEOs, Rail Transit CEOs, Rail Transit, Small Operations, and Workforce Development.

**Table 5-1**  
*Distribution Protocol  
for Email Survey, 2019*

Contact	Activity	Pretest (NTI only)	NTI	APTA
1	Announcement	Thursday, May 2	Monday, May 20	NA
2	Invitation	Friday, May 3	Tuesday, May 21	Wednesday, May 29
3	1st reminder	Tuesday, May 8	Tuesday, May 28	Tuesday, June 11
4	2nd reminder	Tuesday, May 14	Tuesday, June 11	NA
5	Final reminder	Monday, June 3	Tuesday, June 18	Thursday, June 20
	Closeout	Friday, June 7	Friday, June 21	Tuesday, June 25

**Table 5-2**  
*Response Rates*

Audience	Audience Size	Surveys Started	Responses (including Partial)	Completion Rate	Response Rate
Pretest (NTI only)	103	26	21	42%	20%
NTI	10,784	2,332	1,582	68%	15%
APTA	1,796	239	122	51%	7%

The team administered the online survey using Qualtrics XM, which allows for tracking respondents and completion rates. The survey included a total of 48 questions, but respondents were subdivided to answer questions based on their reported job categories, so many experienced a shorter survey. Respondents presented with all questions would have required about 24 minutes to complete the survey, based on the prediction provided by the software; most respondents took substantially less time to complete the survey. The full survey is in Appendix 5.

## Characteristics of Transit Agencies

The research team obtained a sample from a large variety of transit agencies throughout the country. Table 5-3 shows the distribution by type of mode. The largest group was from bus-only agencies, followed by those with both bus and rail (e.g., light rail, commuter rail, heavy rail). Agencies with only paratransit services returned a smaller number of responses. Those who did not report their mode often were from consultancies, nonprofits, or state DOTs.

**Table 5-3**  
*Distribution of Agency  
Responses by Mode  
(N=1720)*

Agency Type	Count	%
Bus-only agencies	872	57.8
Paratransit-only agencies	99	5.8
Rail and bus agencies	503	29.2
Rail-only agencies	124	7.2
Not reported	122	7.1

Respondents were asked to report how large the population was in their service area. Table 5-4 shows the population, which provides a rough proxy for transit agency size. Table 5-5 shows the regional distribution of respondents, based on aggregating FTA regions. The sample represented all 50 states, the District of

Columbia, Puerto Rico, and the U.S. Virgin Islands as well as a small number of respondents from Canadian provinces.

**Table 5-4**  
Reported Size of  
Transit Service Area  
(N=1720)

Population	Count	%
> 1,000,000	612	35.6
200,000–999,999	539	31.3
50,000–199,999	347	20.2
< 50,000	112	6.5
Not reported	110	6.4

**Table 5-5**  
Regional Distribution  
of Respondents  
(N=1720)

Region	Count	%
Central	347	20.1
Northeast	371	21.6
South	441	25.6
West	530	30.8
NA/other	31	1.8

These results suggest that the team obtained an appropriate cross-section of staff from agencies across the country, by agency size, and transit modes. The analysis examines any differences in training needs by modes and agency size.

## Individual Respondent Characteristics

Determining details on the job position of each respondent was vital to progression through the survey, as these responses determined which questions were posed to each individual. For example, a respondent indicating he/she worked in agency operations would not be asked detailed questions on administrative roles at their agency. More than half of respondents reported their current role as administrative, with 28% indicating their position was both operations and administrative and 14% noting they worked in operations only. Table 5-6 shows the full breakdown.

**Table 5-6**  
Current Position  
of Respondents  
(N=1720)

Position	Count	%
Operations	227	13.2
Administrative	926	53.8
Both Operations and Administrative	471	27.4
Don't know	43	2.5
Not reported	53	3.1

The research team developed a list of job classifications based on a number of sources, including the *Public Transportation Occupational Guidebook*, Bureau of Labor Statistics (BLS) Occupational Employment Statistics, and information gathered during the focus group and interview phases of the study [2, 25]. The

job classifications were divided into operations and administrative job categories (Table 5-7).

**Table 5-7** *Job Classifications and Functions*

Category	Job Classification	Function and/or Title
Operations	Reservationist and/or Customer Service	Train Reservation Clerk, Passenger Relations Representative
	Dispatcher	Bus Dispatcher, Train Dispatcher, Demand Response Dispatcher
	Vehicle Operator	Bus Driver, Paratransit Vehicle Operator; Brake, Signal or Switch Operator; Yardmaster; Rail Operator (Commuter, Heavy Rail, Subway, Light Rail, Streetcar)
	Passenger Attendant	Transportation Aide; Train Conductor
	Vehicle, Track, and System Maintainer	Bus Mechanic; Rail Car Repairer; Machinist; Signal, Track, and Switch Repairs
	Vehicle Servicer	Cleaner of Vehicles and Equipment; Vehicle Fueler
	First-Line Supervisor	Bus Traffic Controller; First-Line Supervisor of Mechanics and Repairers
	Technical Operations Trainer	Technical Operations Trainer; Training Supervisor
	Security and Safety	Police Officer; Security Manager; Safety Officer
	Other Operations (fill in)	
Administration	Executive or Management	Chief Financial Officer; General Operations Manager
	Transit Service Planning	Route Planner, Scheduling Manager
	Procurement, Equipment Planning, and Purchasing	Purchasing Manager, Contract Specialist
	Long-Range Planning	Transportation Planner; Capital Planning
	Consumer Service and Sales	Customer Service Representative; Fare Sales Agent
	Marketing and Public Affairs	Communications Representative; Marketing Manager
	Human Resources	Talent and Employment Manager; Benefits Manager; EEO Officer
	Administrative and Support	Office Manager
	Professional Development	Training and Development Manager; Training Specialist
	Finance and Accounting	Internal Auditor; Accounting or Budgeting Supervisor
	Legal	General Counsel; Real Estate Asset Manager
	Insurance and Risk Management	Manager of Risk and Loss; Claims Representative
	Information Technology	Information Technology Manager; IT Specialist
	Facilities and Property Management	Facilities/Property Manager; Building or Station Maintenance Technician
	Engineering	Systems Engineer, Construction Manager
Other Administration (fill in)		

Based on responses as to what type of current position respondents held, they were presented with a list of more detailed job functions for operations only, administrative only, or both (Table 5-8 and Table 5-9).

**Table 5-8**

Number of Respondents in Operations by Job Function (N=566)

Job Function	Count	% of Valid Responses
Reservationist and/or Customer Service	86	15.2
Dispatcher	116	20.5
Vehicle Operator	81	14.3
Passenger Attendant	7	1.2
Vehicle, Track, and System Maintainer	33	5.8
Vehicle Servicer	16	2.8
First-Line Supervisor	103	18.2
Technical Operations Trainer	134	23.7
Security and Safety	104	18.4
Other	241	42.6
Valid Respondents Working in Operations	566	

**Table 5-9**

Number of Respondents in Administration by Job Function (N=1394)

Job Function	Count	% of Valid Responses
Executive or Management	380	27.3
Transit Service Planning	260	18.7
Procurement, Equipment Planning, and Purchasing	333	23.9
Long-Range Planning	304	21.8
Consumer Service and Sales	72	5.2
Marketing and Public Affairs	155	11.1
Human Resources	131	9.4
Administrative and Support	202	14.5
Professional Development	0	0.0
Finance and Accounting	212	15.2
Legal	21	1.5
Insurance and Risk Management	61	4.4
Information Technology	75	5.4
Facilities and Property Management	102	7.3
Engineering	108	7.8
Other	339	24.3
Valid Respondents Working in Administration	1,394	

Top job functions among those who reported their position as operations included technical operations trainer (24%), dispatcher (20%), security and safety personnel (18%), and first-line supervisors. Top job function responses among those who categorized their position as administrative included executive/management (27%), procurement, equipment planning, or purchasing (24%), and long-range planning (22%).

Notably, the respondents had diverse transit industry experience, with half reporting they had worked in the public transportation industry 10 or more years

and the other half less than 10 years (Table 5-10). Finally, most respondents (64%) reported that they interact directly with members of the public as part of their job.

**Table 5-10**  
*Years Worked in  
Public Transportation  
Industry (N=1665)*

Years in Industry	Count	%
> 20	368	22.1
10–20	470	28.2
5–10	294	17.7
2–5	379	22.8
< 2	154	9.3

This overview of respondent characteristics suggests that the survey received responses from a variety of staff positions. Although not necessarily representative of the industry as a whole, this response gave the study team enough results to understand the major needs for training and issues with recruitment and retention.

## Findings

Whereas the study team’s focus was on the training needs of the industry, focus groups and interviews revealed that recruitment and retention play a role in training needs. Recruiters may find that new staff have inadequate skills and need training once hired; training is a way to keep and promote employees. Some agencies find that they train employees who then leave for the private sector, which may offer better compensation. Following is a discussion of the details of training needs, recruitment, and retention, and how these affect transit agencies.

### Training Issues and Skills

Over 80% of respondents indicated involvement in staff training in some way. Among those, 58% reported they take part in training, 38% noted they decide which staff receive training, and 36% shared that they develop training materials, programs, or curricula (see Table 5-11). About 8% of the sample reported they were not involved with training at their agency.

**Table 5-11**  
*Involvement with  
Training at Agency  
(N=1341)*

Involvement in Training	Count	%
Participate in training	960	71.6
Trainer	574	42.8
Determine who receives training	624	46.5
Set training budgets	387	28.9
Develop training materials, programs, or curricula	596	44.4
Other	320	10.4

More than half of respondents stated that their agency encounters issue(s) that limit their ability to provide training. Of those reporting difficulties, the largest impediments were scheduling time off or time away for employees to receive

training (72%) and lack of financial resources to offer training (64%); this was noted in the interviews and focus groups as well. Other limitations to training reported by more than one-third of these respondents included a lack of trainers and/or expertise to provide training, lack of available training courses, and lack of training options (e.g., virtual classes, webinars, classroom instruction), as shown in Table 5-12. Variation in responses by agency mode and size is similar; the one exception was that about 88% of those in paratransit-only agencies and those in smaller metro areas find it difficult to schedule time off for employees to train.

**Table 5-12**  
*Agency Limitations  
to Providing Training  
(N=873)*

Limitation	Count	Percent
Difficult to schedule time off or time away from job for employees to train	630	72.3
Lack of appropriate training materials	232	26.6
Lack of available training courses	308	35.3
Lack of training options (e.g., virtual classes, webinars, classroom instruction)	295	33.8
Lack of employee interest or engagement	148	17.0
Lack of resources/funding	561	64.3
Lack of trainers and/or expertise to provide training	330	37.8
Unaware of available training courses	202	23.1
Other	92	10.5

Respondents shared that staff typically receive training in-person at their agency (87%), in-person at an off-site location (66%), and/or via online courses (60%) (Table 5-13). The study team found little variation in these percentages by primary agency mode and metro area size. Staff typically are trained by in-house trainers (81%), via external courses offered by entities such as APTA and NTI (57%), via job shadowing (39%), and/or through mentoring (38%). Other less common means of providing training included utilizing outside training contractors and equipment vendors. Interestingly, very few respondents (13%) used technical schools or community colleges to impart staff training, as shown in Table 5-13. Respondents from agencies with rail reported somewhat higher levels of outside training contractors as sources of training (39% for rail and bus, 47% for rail-only agencies). Many interviewees and focus group participants understood the value of forming partnerships with technical schools and community colleges; although some agencies have done this, the results suggest that many have not.

**Table 5-13**  
*How Agency Staff  
Typically Receive  
Training (N=1652)*

Training Method	Count	%
On-line courses	987	59.8
In-person at my agency	1436	86.9
In-person off-site at another location	1086	65.7
Other	61	3.7

**Table 5-14**  
How Agency Staff  
Typically Trained  
(N=1648)

Training Provider	Count	%
Equipment vendors	437	26.5
External courses (e.g., provided by NTI, APTA, TLC)	935	56.7
In-house trainers	1334	81.0
Job shadowing	648	39.3
Mentoring	633	38.4
Other transit agencies	172	10.4
Outside training contractors	519	31.5
Technical schools or community colleges	218	13.2
Other	109	6.6

Table 5-15 shows the variation in training practices by the primary mode of the agency. There are some distinct differences; paratransit-only and rail-only agencies are less reliant on equipment vendors and external courses and much more reliant on in-house training.

**Table 5-15** Variation Among Agency Primary Mode in Training Practices

Agency Mode	Bus Only		Paratransit Only		Rail and Bus		Rail Only	
	Count	%	Count	%	Count	%	Count	%
Equipment vendors	236	27.1	17	17.2	157	31.2	25	20.2
External courses (e.g., provided by NTI, APTA, TLC)	470	53.9	43	43.4	323	64.2	67	54.0
In-house trainers	696	79.8	83	83.8	428	85.1	78	63.0
Job shadowing	343	39.3	52	52.5	190	37.8	39	31.5
Mentoring	313	35.9	36	36.4	212	42.2	46	37.1
Other transit agencies	93	10.7	16	16.2	39	7.8	12	9.7
Outside training contractors	209	24.0	26	26.3	198	39.4	58	46.8
Technical schools or community colleges	93	10.7	5	5.1	100	19.9	14	11.3
Other (fill in)	54	6.2	4	4.0	27	5.4	16	12.9
Total number presented with question	872	100	99	100	503	100	124	100

Notably, over 70% of respondents reported that their agency's current workforce possesses the "right skills." According to more than half of the respondents, the skills most lacking among their agency's current workforce are leadership and/or supervisory, effective communication (written and/or oral), conflict resolution, and project management (Table 5-16). Staff training can be vital to skill development for incoming and long-term agency employees and can contribute to overall employee and agency success.

**Table 5-16**  
*Skills Most Lacking  
 Among Agency's  
 Current Workforce  
 (N=429)*

Skills Most Lacking	Count	%
Vehicle maintenance skills	138	32.2
Leadership and/or supervisory skills	314	73.2
Effective communication skills, written and/or oral	288	67.1
Compliance skills	169	39.4
Project management skills	224	52.2
Time management skills	187	43.6
Computer skills	161	37.5
Technical skills (e.g., engineering, IT)	125	29.1
Customer services skills	166	38.7
Conflict resolution skills	238	55.5
Work readiness skills (e.g., professionalism, punctuality, dress codes)	158	36.9
Other	27	6.3

A more detailed look at the reported lack of skills reveals some differences based on the primary mode of the agency (Table 5-17). For example, only 10% of those at rail-only agencies reported an issue with vehicle maintenance skills, and fewer reported the lack of leadership/supervisory skills in paratransit-only and rail-only agencies, although the sampling rate for each was small. Other skills reported to be lacking tended not to vary based on primary agency mode.

**Table 5-17** *Variation by Primary Mode of Agency in Skills Most Lacking Among Current Workforce*

Agency Mode	Bus Only		Paratransit Only		Rail and Bus		Rail Only	
	Count	%	Count	%	Count	%	Count	%
Vehicle maintenance skills	85	34.1	6	31.6	41	32.5	3	10.7
Leadership and/or supervisory skills	191	76.7	9	47.4	95	75.4	13	46.4
Effective communication skills, written and/or oral	179	71.9	13	68.4	77	61.1	14	50.0
Compliance skills	98	39.4	7	36.8	43	34.1	12	42.9
Project management skills	119	47.8	11	57.9	74	58.7	15	53.6
Time management skills	106	42.6	11	57.9	53	42.1	11	39.3
Computer skills	103	41.4	8	42.1	38	30.2	7	25.0
Technical skills (e.g., engineering, IT)	71	28.5	4	21.1	37	29.4	9	32.1
Customer services skills	108	43.4	10	52.6	38	30.2	7	25.0
Conflict resolution skills	149	59.8	10	52.6	64	50.8	10	35.7
Work readiness skills (e.g., professionalism, punctuality, dress codes)	96	38.6	8	42.1	49	38.9	3	10.7
Other (fill in)	11	4.4	2	10.5	7	5.6	7	25.0
Total	249		19		126		28	

Top administrative job areas that respondents felt were most in need of training were executive or management, procurement, equipment planning and purchasing, professional development, and transit service planning. Respondents chose the top three areas most in need of more training (Table 5-18). There was little variation between agencies based on primary mode; those agencies serving the largest metro areas (over one million in population) did not report as much need for additional training for transit service planning (18%), long-range planning (14%), and marketing and public affairs (9%) compared to other agencies with smaller service areas.

**Table 5-18**  
*Administrative Job Areas Most in Need of Additional Training (Based on Top Three Selected) (N=1387)*

Administrative Job Areas	Count	%
Executive or Management	397	28.6
Transit Service Planning	405	29.2
Procurement, Equipment Planning, and Purchasing	522	37.6
Long-Range Planning	289	20.8
Consumer Service and Sales	87	6.3
Marketing and Public Affairs	229	16.5
Human Resources	303	21.9
Administrative and Support	237	17.1
Professional Development	448	32.3
Finance and Accounting	190	13.7
Legal	61	4.4
Insurance and Risk Management	94	6.8
Information Technology	224	16.1
Facilities and Property Management	187	13.5
Engineering	111	8.0
Other	82	5.9

Top operational job areas that respondents felt were most in need of training were vehicle operators, first-line supervisors, and dispatchers. Reservationist and consumer service as well as security and safety positions also scored relatively high. Table 5-19 provides the full list. Staff from agencies in larger metro areas report lower needs for training in reservationist and consumer service (13%) compared to smaller metro areas (about 25% of staff reporting that training is needed). There is less reported need for vehicle operators in the largest service area (27%) compared to nearly 50% reported in smaller metro areas. This may be partly due to only 10% of rail-only agency staff reporting a need for vehicle operator training while 45% of bus-only agency staff and 57% of paratransit-only agency staff report the need for vehicle operator training.

**Table 5-19**  
*Operations Job Areas  
 at Most in Need of  
 Additional Training  
 (Based on Top Three  
 Selected) (N=1252)*

Operations Job Areas	Count	%
Reservationist and/or Consumer Service	359	28.7
Dispatcher	484	38.7
Vehicle Operator	620	49.5
Passenger Attendant	55	4.4
Vehicle, Track, and System Maintainer	239	19.1
Vehicle Servicer	164	13.1
First-Line Supervisor	606	48.4
Technical Operations Trainer	253	20.2
Security and Safety positions	376	30.0
Other Operations job area	151	12.1

### Training Needs for Specific Job Tasks

Respondents for specific job tasks received more detailed questions on training. The team bifurcated the survey questions to direct respondents based on whether they work in administrative jobs or operations jobs (the latter including some overarching administrative categories such as Executive, Human Resources, and Professional Development). Respondents answered questions based on general categories of job functions, e.g., Customer Service, ADA-related, and Emergency Response, which were further restricted to only those job categories to which they applied. See Table 5-7 for job category definitions. The study team focused on the top selections of needed training skills as identified by respondents.

Table 5-20 lists the most-needed customer service training for vehicle operators and administrative staff; communication and conflict resolution skills are the top areas reported as deficient. Table 5-21 shows a similar result for workplace skills training needs; conflict resolution and verbal communication skills are identified as key training needs. For vehicle, track, and system maintainers, verbal communication is also identified, but the percent reporting a need is much lower, with many answering that they did not know what the training needs were (this pattern is repeated in other rail-oriented questions, discussed further below).

**Table 5-20**  
*Top Customer Service  
 Training Most Needed*

	Count	%
<b>For Vehicle Operators (N=508)</b>		
Basic customer relations	275	54.1
Communicating with the public	319	62.8
Conflict resolution	364	71.7
<b>For Administrative Staff (N=950)</b>		
Communicating with the public	474	49.9
Conflict resolution	564	59.4
Diversity and sensitivity training	449	47.3

**Table 5-21**  
*Top Workplace Skills  
 Training Most Needed*

	Count	%
<b>For Vehicle Operators (N=501)</b>		
Verbal communication skills	338	67.5
Conflict resolution	355	70.9
<b>For Vehicle, Track, and System Maintainers (N=462)</b>		
Verbal communication skills	143	31.0
Computer skills	141	30.5
Time management	148	32.0
Don't know	211	45.7
<b>For First-Line Supervisors (N=490)</b>		
Verbal communication skills	333	68.0
Written communication skills	287	58.6
Conflict resolution	345	70.4
<b>For Administrative Staff (N=963)</b>		
Verbal communication skills	492	51.1
Written communication Skills	478	49.6
Conflict resolution	537	55.8
Time management	456	47.4

Depending on their reported job position (administrative and/or operations), respondents were also asked for detail on the specific types of training most needed by various staff positions. For example, respondents in operations were asked for details on training needed by vehicle operators. The types of customer service training vehicle operators need most are conflict resolution, communication with the public, and basic customer relations. ADA-related training for vehicle operators needs to focus on ADA compliance issues, general disability awareness training, and mobility device securement. Respondents noted that conflict resolution and verbal communication skills were the two-basic workplace skills training is most needed by operators.

Table 5-22 identifies specific ADA-related trainings needed by vehicle operators and administrative staff. Respondents report a need among vehicle operators for more general disability awareness training, ADA compliance, and how to serve mentally and cognitively impaired customers. Administrative staff also reported needing training in the latter. Additionally, our respondents reported a need for more training among vehicle operators in emergency response and crisis management (Table 5-23).

**Table 5-22**

*Top ADA-related  
Training Most Needed*

	Count	%
<b>For Vehicle Operators (N=505)</b>		
General disability awareness training	298	59.0
ADA compliance	317	62.8
Serving customers with mental health or cognitive disorders	336	66.5
<b>For Administrative Staff (N=941)</b>		
Serving customers with mental health or cognitive disorders	533	56.6

**Table 5-23**

*Top Emergency  
Response Training  
Most Needed*

	Count	%
<b>For Vehicle Operators (N=482)</b>		
Emergency response and/or crisis management	304	63.0

Table 5-24 shows operations training needed for bus, paratransit, and rail operators. Responses to these categories suggest a lower need for training in these areas, as none exceeded 40% of responses. Interestingly, for rail operators there was a large percentage of respondents who reported they did not know the training needed in this area. For bus and/or paratransit operators, the training needs identified range from operation of new vehicles to basic maintenance skills, but fewer respondents answered these questions compared to those asking about training needs for other positions.

**Table 5-24**

*Top Operations  
Training Most Needed*

	Count	%
<b>For Bus and/or Paratransit Operators (N=417)</b>		
Operation of new vehicles	144	34.5
Communication systems	155	37.2
Basic maintenance skills to troubleshoot mechanical issues	160	38.4
<b>For Rail Operators (N=113)</b>		
Radio systems operations and communications	31	27.4
Signal operations	30	26.6
Positive Train Control	29	25.7
Don't know	61	54.0

Table 5-25 shows professional development training reported to be needed for first-line supervisors and administrative staff. These include staff supervision, leadership training, and problem-solving. Training is needed more for first-line supervisors and, in particular, leadership training is the largest reported need. First-line supervisors are generally in charge of operators and maintenance staff, and an employee promoted from the ranks often fills these positions. Administrative staff (those responsible for office management) report similar needs.

**Table 5-25**

*Top Professional  
Development Training  
Most Needed*

	Count	%
<b>For First-Line Supervisors (N=497)</b>		
Staff supervision	344	69.2
Leadership training	363	73.0
Problem-solving	338	68.0
<b>For Administrative Staff (N=967)</b>		
Project management	462	47.8
Leadership training	503	52.0
Problem-solving	437	45.2

Table 5-26 shows the technical training reported to be most needed by respondents. Note that for rail maintainers, more than half of respondents reported that they did not what training was needed. Planning and engineering staff reported that various trainings were needed for data analysis, forecasting, and transportation planning skills. For information technology staff, there was again a relatively large percentage of respondents (38%) reporting that they did not know what technical training was needed. Likewise, in Table 5-27, for vehicle, track, and system maintainers, a large percentage of respondents reports that they did not know what training was needed.

**Table 5-26**

*Top Technical Training  
Most Needed*

	Count	%
<b>For Rail Maintainers (N=113)</b>		
Signal Communications	26	23.0
Don't Know	63	55.8
<b>For Planning and Engineering Staff (N=525)</b>		
Data Analysis	245	46.7
Forecasting	224	42.7
Transportation Planning	232	44.2
<b>For Information Technology Staff (N=339)</b>		
System Integration	150	44.3
Don't Know	129	38.1

**Table 5-27**

*Top Other Kinds of  
Training Most Needed*

	Count	%
<b>For Vehicle, Track, and System Maintainers (N=460)</b>		
Emergency management training	119	25.9
Supervision or leadership training	160	34.8
Don't know	213	46.3

## Agency Partnerships

During the key informant interviews, agency stakeholders stated that partnerships between transit agencies and external entities in terms of staff hiring and/or training practices are invaluable. More than 80% of survey respondents indicated their agency had worked with external partners for recruiting and/or training purposes. Of those who had partnered, nearly 80% noted collaborating with federal, State, or local government entities in this regard, 54% with other transit agencies, 34% with nonprofits, and 18% with unions (Table 5-28).

**Table 5-28**

*Partners Worked with for Training and/or Recruitment (N=1204)*

Partner	Count	%
Federal, state, or local government entities	954	79.2
Nonprofits	411	34.1
Other transit agencies	655	54.4
Unions	216	17.9
Other	123	10.2

About 58% of the sample reported partnering with educational institutions for training and/or recruitment; those most commonly reported were community colleges, vocational schools, and four-year colleges (Table 5-29). Fewer than one-third were working with high schools and fewer than 10% with primary schools. Also, notable, although over half of respondents reported collaborating with the education sector on training and/or recruitment activity, more than 40% were not working with educational partners, representing a missed opportunity. Respondents from agencies in smaller service areas tended to partner less often with educational partners (59% not partnering) compared to the largest service area agencies (only 26% reported not partnering). Respondents from agencies in service areas of less than 50,000 also had the lowest rate of partnering with four-year colleges, community colleges, and vocational schools (11%, 19%, and 10%, respectively).

**Table 5-29**

*Educational Partners Worked with for Training and/or Recruitment (N=840)*

Educational Partner	Count	%
Primary schools	53	6.3
High schools	226	26.9
Community colleges	522	62.1
Four-year colleges	439	52.3
Vocational technical or vocational school	442	52.6

## Staff Recruitment

About 58% of respondents indicated involvement in recruiting and/or hiring new employees in some way, with 76% indicating involvement in the hiring process, 49% in determining needed staffing levels, 37% with recruitment, and 30% with

designing or developing recruitment strategies, policies, or materials (see Table 5-30). For paratransit-only agencies, there was broader reported involvement with all these recruitment activities; the same pattern generally held for agencies serving smaller regions.

**Table 5-30**

*Respondent Involvement with Recruitment and Hiring (N=966)*

Involvement	Count	%
Determine staffing levels	476	49.3
Design or develop recruitment strategies, policy, or materials	293	30.3
Recruitment	358	37.0
Hiring process	736	76.2
Other	103	10.7

Notably, more than three-quarters of respondents reported barriers or challenges to staff recruitment. Reported difficulties focused on lack of awareness for transit careers among the workforce (58%), noncompetitive wages (54%), lack of basic work skills/professionalism among prospective hires (51%), the nonstandard work hours typical in the transit field (51%), insufficient educational programs preparing persons to work in the public transportation industry (40%), and agency uncertainty about where to find qualified candidates (36%). About 28% of respondents also mentioned a high-stress work environment and lack of sufficient agency outreach as imposing challenges to successful recruitment (Table 5-31). Many of these issues came up in interviews and focus group discussions as well.

**Table 5-31**

*Barriers to Recruiting New Staff (N=968)*

Barriers	Count	%
Not sure where to find qualified candidates	349	36.0
Lack of sufficient outreach	273	28.2
High-stress work environment	275	28.4
Noncompetitive benefits	210	21.7
Noncompetitive wages	527	54.4
Candidate pool lacks basic work skills/professionalism	497	51.3
Insufficient educational programs that prepare persons to work in transit agencies	393	40.6
Nonstandard work hours (evenings, nights, weekends, split shift)	491	50.7
Potential workforce lacks knowledge of transit industry jobs and/or career path	563	58.2
Other	136	14.0

The survey queried respondents on the relative difficulty of recruiting in specific administrative and operations positions. The research team used a three-point scale of “Easy,” “Somewhat Difficult,” and “Difficult.” Recruitment into operations positions was reported by many to be “somewhat difficult” or “difficult,” as stated by more than half of respondents for all positions and by

more than three-quarters of respondents for some positions, as shown in Table 5-32. The largest reported difficulties were for vehicle operators; vehicle, track, and system maintainers; and staff working in technical operations training. The easiest positions to fill were reservationist and/or consumer service staff. Those from transit agencies with larger service areas report less difficulty recruiting vehicle operators compared to those serving smaller service areas. In general, other operations positions do not show much variation by agency service area.

**Table 5-32**  
*Difficulty with  
Recruiting Operations  
Positions*

Job Position	Total	% Somewhat Difficult or Difficult
Reservationist and/or Consumer Service	824	53.3
Dispatcher	945	73.9
Vehicle Operator	1048	85.4
Passenger Attendant	316	58.5
Vehicle, Track, and System Maintainer	617	84.0
Vehicle Servicer	872	79.4
First-Line Supervisor	926	76.9
Security and Safety Positions	794	76.3
Technical Operations Training	766	85.9
Other	55	87.3

Large percentages of respondents also reported difficulty with recruiting for administrative positions, as shown in Table 5-33 for jobs ranging from engineering to facilities management to executive and management. Conversely, the top administrative positions that respondents noted were “easy” to fill were administrative and support roles and consumer service and sales positions. There was little variation based on transit agency service area size.

**Table 5-33**  
*Difficulty with  
Recruiting  
Administrative  
Positions*

Job Position	Total	% Somewhat Difficult or Difficult
Executive or Management	941	80.2
Transit Service Planning	805	81.7
Procurement/Equipment Planning and Purchasing	833	82.5
Long-Range Planning	751	83.4
Consumer Service and Sales	655	56.3
Marketing and Public Affairs	757	62.4
Human Resources	795	64.8
Administrative and Support	900	53.1
Professional Development	609	79.3
Finance and Accounting	550	72.7
Legal	602	76.9
Insurance and Risk Management	741	76.4
Information Technology	744	74.6

**Table 5-33**  
**cont'd***Difficulty with  
Recruiting  
Administrative  
Positions*

Job Position	Total	% Somewhat Difficult or Difficult
Facilities Management	532	80.8
Engineering	41	92.7
Other	827	71.2

Agency respondents reported a variety of successful recruitment strategies. They were asked about the effectiveness of these strategies overall and for recruitment of younger workers (Table 5-34). Generally, the strategies were less successful for recruitment of younger workers, with on-line applications and internships being the most successful when targeting this group, although this was reported by only 34% of respondents. For general recruitment of all age groups, respondents reported advertising, good benefits packages, online applications, and referrals from current employees to be most effective.

**Table 5-34***Strategies Used to  
Recruit Generally and  
for Young Workers  
Specifically*

Strategies	General Recruitment (N=1020)		Younger Workers (N=1021)	
	Count	%	Count	%
Advertising	781	76.5	290	28.4
Apprenticeships	227	22.2	247	24.2
Benefits package	618	60.5	199	19.5
Flexible work arrangements, including telework	261	25.6	154	15.1
Free or paid training for CDL	528	51.7	227	22.3
Internships	289	28.3	345	33.8
Job fairs	511	50.1	293	28.7
Online application	708	69.3	354	34.7
Partnering with educational sector	225	22.0	211	20.7
Recruitment from other companies and/or industries	208	20.4	86	8.4
Referrals from current employees	611	59.8	218	21.4
Targeted recruitment of veterans/minority populations	331	32.4	142	13.9
Temporary agencies	293	28.7	135	13.2
Tuition assistance	229	22.4	158	15.5
Other	21	2.1	21	2.1

## Staff Retention

Hiring is only one part of the equation when securing a competent workforce. Retention success is also vital to the sound functioning of any transit agency. Respondents were asked to write down whether it was easy, somewhat difficult, or difficult to retain staff in specific job areas. Table 5-35 shows the results for operations positions and Table 5-36 shows administrative positions. Operations

positions reported as somewhat difficult or difficult to retain included vehicle operators; vehicle, track, and system maintainers; and those working in the vehicle service area; operations positions reported as relatively easier to retain focused on reservationists and consumer service staff, dispatchers, and first-line supervisors. Administrative positions reported as somewhat difficult or difficult to retain included those in engineering; information technology and procurement, equipment planning, and purchasing; administrative positions reported as easy to retain were administrative and support roles, human resource positions, and executive or management roles. In both types of positions, although some were easier for retaining staff, large percentages (over 40%) of respondents indicated the opposite.

*I think what we see is if we get a younger person in a good job and they don't realize what they've got—they're easy come, easy go. They come in, they are young, they don't realize all the benefits—they have health insurance and retirement, whereas some of the older people that come in have worked in the private sector for a while and are more likely to be better because they know—"I'm not going to get this money elsewhere, I'm not going to get this retirement elsewhere." They are appreciative of the benefits.*

*—Focus group participant,  
APTA Rail Conference*

**Table 5-35**

*Difficulty Retaining  
Staff in Operations  
Positions*

Position	Total	% Somewhat Difficult or Difficult
Reservationist and/or Consumer Service	734	47.4
Dispatcher	857	50.4
Vehicle Operator	930	79.0
Vehicle, Track, and System Maintainer	514	67.3
Vehicle Service Area	654	64.5
First-Line Supervisor	821	54.3
Technical Operations Training	588	64.8
Other (fill in)	29	86.2

**Table 5-36**

*Difficulty Retaining  
Staff in Administrative  
Positions*

Position	Total	% Somewhat Difficult or Difficult
Executive or Management	858	46.4
Transit Service Planning	696	54.7
Procurement, Equipment Planning, and Purchasing	756	57.7
Long-Range Planning	649	58.2
Consumer Service and Sales	564	48.6
Marketing and Public Affairs	673	48.6
Human Resources	690	46.2

**Table 5-36**  
**cont'd***Difficulty Retaining  
Staff in Administrative  
Positions*

Position	Total	% Somewhat Difficult or Difficult
Administrative and Support	802	42.6
Professional Development	497	61.4
Finance and Accounting	744	52.7
Legal	454	52.9
Insurance and Risk Management	508	54.5
Information Technology	640	59.2
Facilities Management	652	54.3
Engineering	424	65.1
Other (fill in)	27	74.1

The most successful employee retention strategy noted was a strong employee benefits package, with over 77% of respondents citing it as critical for retention. It was also the most effective strategy to retain younger workers, as indicated by 49% of respondents (Table 5-37). This finding is consistent with what participants said in the focus groups, though some indicated that younger workers are less inclined to be attracted by benefits. Other commonly-cited successful retention strategies included employee awareness of pay increase policies, presence of a positive and supportive agency culture, and employee awareness of the positive community impact of transit. However, these results were reported by substantially fewer respondents than those who mentioned benefits.

**Table 5-37***Strategies to Retain  
Staff Generally and  
for Young Workers  
Specifically*

Strategies	General Staff (N=903)		Younger Workers (N=550)	
	Count	%	Count	%
Accelerated career progress within agency	254	28.1	144	26.2
Benefits package	701	77.6	270	49.1
Career pathways	272	30.1	164	29.8
Employee awareness of pay increase policies	429	47.5	188	34.2
Employee awareness of positive community impact of agency	396	43.9	198	36.0
Flexible work schedule/hours	368	40.8	219	39.8
Frequent internal communications among all staff	327	36.2	136	24.7
Green/new technology use	186	20.6	158	28.7
Job shadowing	190	21.0	135	24.6
Leadership development	350	38.8	183	33.3
Mentorship	256	28.4	176	32.0
Positive and/or supportive culture within agency	409	45.3	216	39.3
Professional development	372	41.2	208	37.8
Succession planning	216	23.9	104	18.9
Tuition assistance	284	31.5	213	38.7
Other	15	1.7	15	2.7

Respondents reported that tuition assistance was a successful strategy mainly for younger workers (39%) compared to general staff retention (31%). Other commonly-cited retention strategies that appealed to younger workers included agency offering flexible work schedules/hours, presence of a positive and supportive agency culture, and professional development. Again, fewer than 40% of respondents reported using these.

*They look at the hourly wage and that's where we are struggling. We have a small shop and we're crunched—we're short two mechanics, and we don't know where to get them. We just had a guy say he's leaving soon because he's going to go rebuild transmissions, going to make \$10,000 more a year and set his own schedule as opposed to working that third shift until 4:00 am.*

*—Focus group participant,  
APTA Bus and Paratransit Conference*

There are nuances to these results, and indications that staff, both young and those with more experience, balance benefits with wages and schedule flexibility.

The survey results demonstrate some agency job positions are difficult to recruit and retain and some are easy. Specifically, in terms of administrative positions, recruiting and retaining engineering staff seemed to be the most difficult for agencies, and recruiting and retaining for administrative positions such as administrative support roles was comparatively easy. In terms of operations positions, agencies struggled most with recruiting and retaining vehicle operators, vehicle, track, and system maintainers, and vehicle servicers, but found it easy to fill and retain operations positions including reservationists and/or customer service staff, dispatchers, and first-line supervisors.

### New Technology

The team collected information on job positions that needed increased training specifically on new technologies. Notably, most responses were similar to the job categories reported as in need of training overall. Specifically, top administrative job positions in need of new technology training were executive/management; procurement, equipment planning, and purchasing; and transit service planning. Top operational job areas most in need of new technology training were dispatchers, first-line supervisors, and vehicle operators.

Regarding autonomous vehicle (AV) technology, respondents were asked if their agency was currently planning for AVs. Over half responded negatively, with more than a quarter indicating they were unaware if their agency was making plans to use this new technology. About one-third noted that their agency had not yet considered the effect AVs may impose on employee recruitment and training, and almost half were unsure if their agency had yet considered the potential effects.

Much of the information gathered on the need for new technology training was gained through the open-ended responses provided to the survey and in focus groups and interviews. Many respondents mentioned the need for understanding how battery electric buses will affect their agencies, ranging from training maintenance staff on battery electric buses to training operations staff on the planning and operational consequences of using these buses, which may not have the range of conventional diesel or gasoline buses and may have functional constraints when operating in extreme temperatures.

SECTION  
6

# Moving Forward: Guiding the Way for a Successful 21st Century Public Transportation Workforce

Successfully positioning the current and next generation public transportation industry workforce to thrive as it progresses through the 21st century requires recognition of the strength of the current workforce as well as its shortcomings and a commitment from agency senior leadership to pursuing both traditional and innovative approaches to mitigate those deficiencies. This research study focused on investigating public transportation industry workforce skills gaps, strategies to address those gaps, and approaches to more successfully recruit and retain workers, from frontline to technical to professional staff.

The research team gathered information from over 1,800 professionals working for or otherwise affiliated with the U.S. transit industry via a series of listening sessions, focus groups, key informant interviews, and a nationwide transit agency survey. Identified in training were problems and deficiencies as well as issues associated with staff recruitment and retention. Also found was a multitude of approaches and strategies the U.S. public transportation industry has successfully pursued to strengthen the workforce, providing models that others can replicate. Several of these promising approaches, organized under the four core topic areas explored in this research, are presented below.

## Skills Gaps

All study outreach confirmed that both soft and hard skills gaps exist within the U.S. public transportation industry. Means to address these gaps, which are applicable to a diverse group of transit agencies, include the following:

- **Pursue partnerships within and beyond the public transportation industry.** Education sector partnerships can help in developing training programs and curricula, and partnering with other transit agencies, transit unions, and nonprofits can help build competencies and address skills gaps.
  - Regarding educational partnerships in general, agencies should seek opportunities to partner more with primary schools and high schools in addition to more traditional education partners such as vocational schools and community and four-year colleges. By establishing and maintaining lines of communication with educational partners, these entities can more

readily develop programs that address the competencies needed by the transit industry.

- Regarding educational partnerships with higher education, those relationships should focus attention on exploring opportunities to expand the currently very limited post-secondary coursework offering foundational knowledge on U.S. public transportation systems. Pursuing opportunities to expand this foundational coursework to disciplines in addition to engineering should be a priority.
- **Commit to employee training** for incoming employees as well as incumbent workers as a way to address skills gaps.
- **Develop and institute a defined onboarding process** for new personnel as well as for personnel moving within the agency into advanced positions that will seek to identify and address critical skill deficiencies.
- **Institute apprenticeship and mentoring programs.**

## Recruitment

The transit industry offers numerous and diverse career pathways and opportunities. However, students and job seekers need to know that these opportunities exist. A multipronged approach to identifying new talent must be undertaken by the U.S. transit industry as follows:

- **Consider the creation of a fresh, public-facing national campaign** to inform and celebrate the robust number of job opportunities and career paths within the public transportation industry.
- **Identify and clearly communicate transit industry staffing needs** to job seekers from a diversity of educational disciplines and backgrounds, including but not limited to veterans, young adults, middle-aged persons, and disadvantaged populations.
- **Initiate and sustain a concerted effort** to develop a workforce that more closely reflects the diversity of the nation and communities that transit agencies serve.
- **Review skills and define core competencies** needed for positions and communicate those clearly to a broad audience of prospective job seekers. This may require rewriting and updating job descriptions to better communicate the skills needed for positions and to avoid industry-specific terminology.
- **Optimize recruitment** of potential candidates by focusing on associated skill sets, e.g., customer service, computer technology, etc., rather than limiting candidate pools to persons only with public transportation industry experience.

- **Specify step-by-step career ladders** that outline pathways to job advancement within a given agency.
- **Make job applications available online**, a practice described as especially beneficial to recruiting young professionals.
- **Recognize both the immediate and future value of pursuing and sustaining collaborative partnerships** with the education sector by working with students as young as elementary school age to those seeking graduate-level degrees to create awareness of transit career pathways and a pipeline of prospective employees. Transit agencies should communicate to educational leaders how these partnerships can translate to career opportunities for students.
- **Institute agency internship programs.**

## Training

Continually- and rapidly-changing industry technologies necessitate increased and adaptable training for skill acquisition and retention. Challenges that stymie training success are time, financial, and staff constraints. Employee training recommendations focus on:

- **Commit to the concept of training** as a standard feature of the agency's culture that builds staff competencies, contributes to a constructive work environment, and can positively impact staff capabilities and retention efforts.
- **Promote information sharing** about training opportunities through the creation of a centralized national clearinghouse.
- **Maintain up-to-date and high-quality training programs and materials** to facilitate learning of new systems and products used by agencies. This is especially vital as disruptive technologies such as autonomous vehicles come into use.
- **Increase attention on customer-oriented and communication-focused training.** While recognizing that training needs may vary across job positions within an agency, this study demonstrated the seemingly universal need for increased customer-oriented training (e.g., communicating with the public) and both internal and external communication-focused training (e.g., verbal and written, conflict resolution, leadership, understanding of disability issues).
- **Explore approaches to offset training costs**, such as using grant funds when feasible, online and e-learning opportunities, train-the-trainer initiatives, mentoring, and acquiring training materials from other sources and customizing them to meet agency needs.
- **Identify and secure professional trainers** who are themselves well-trained, as the quality of an agency's trainers can have a vital role in securing employee training buy-in.

- **Consider offering external training opportunities** such as through statewide and regional transit associations and nationwide nonprofits such as APTA in addition to in-house training.
- **Pursue non-public transportation industry training opportunities** that can offer additional benefits including networking.
- **Consider offering employee training incentives** such as certification, recognition, and/or perks programs.
- **Pursue agency-wide cross-training** as a way to inform both new and long-term employees about the diverse staff roles that enable the agency's successful operation. Peer-to-peer learning opportunities such as these can contribute to increased understanding of the agency and foster employee comradery.

## Retention

There is no single solution to increase public transportation industry employee retention. Challenges to retention often focus on salary, work hours, and benefit reductions. Recommended strategies to enhance retention efforts and overcome challenges tend to focus on employee quality of life factors and fostering employee growth and professional development, and include the following:

- **Develop and promote a supportive and positive work culture** guided by a core mission to serve the community.
- **Continue to offer strong benefit packages and competitive salaries.**
- **Invest in employee success** by supporting employee continuing education and employee fulfillment of professional development goals.
- **Improve and increase intra-agency communication efforts.**
- **Seek employee contributions** to decision-making and agency problem-solving.
- **Promote from within the agency.**
- **Provide and communicate a clear career progression/pathway.**
- **Offer employee-mentoring opportunities** with senior-level staff to support employee growth.
- **Enable employee participation in industry trainings and conferences** (e.g., Transportation Safety Institute, APTA), which provide an opportunity to broaden their knowledge of the transit industry and interact with peers within and beyond their agency.
- **Institute employee recognition** for exemplary customer service.
- **Demonstrate commitment** to employee well-being and health.
- **Develop strategies targeted to improve work experiences.** Certain positions (e.g., bus operator, maintenance technician) typically have lower

retention rates. Developing strategies that improve the work experience of employees in these positions is especially needed. For example, consider implementing a mentoring program to support new bus operators that can feature trainer ride-alongs and in-person reviews.

- **Recognize the needs of younger staff** who may seek employment opportunities that encourage independence, offer flexible schedules, and provide opportunities to contribute to the larger community. Seek to meet elements of these interests, as feasible within your agency.

## What Should Come Next?

Exploring and implementing many of the recommended strategies presented will greatly aid U.S. transit agencies nationwide in their attempt to build and strengthen their workforce. Not all will be applicable to all agencies, with some approaches undoubtedly offering greater appeal and increased likelihood for success compared to others. That said, the qualitative and quantitative tasks undertaken in this research effort revealed that U.S. transit agencies experience more similarities than differences on the topics of employee skills gaps, recruitment, training, and retention.

Another finding from this research was the realization that to holistically address the workforce challenges facing the public transportation industry, more research and outreach must be undertaken with targeted sector employee groups for whom the industry faces significant recruitment and/or retention obstacles. Those employee groups include bus operators, mechanics, and IT professionals. The study team recommends a series of nationwide focus groups with professionals in these employee groups and their supervisors to explore in greater detail the workforce challenges and successful strategies in surmounting them as applicable to these targeted and in-demand transit positions. Due to the current public health emergency, these sessions can be successfully conducted virtually via a platform such as Zoom or WebEx.

APPENDIX

# 1

## Focus Group Topic Guide

## Focus Group Topic Guide

APTA Rail Conference  
June 11-14, 2017  
Baltimore, MD

### PRE-FOCUS GROUP

[Conduct check-in, hand out and collect consent form and recording addendum.]

#### I. WELCOME, OVERVIEW AND INTRODUCTIONS (15 minutes)

First, let me begin by saying thank you. We really appreciate you volunteering to participate in our focus group today. My name is Andrea Lubin and I am going to lead our discussion with my colleague, Stephanie DiPetrillo. Stephanie and I work at the Bloustein School of Planning and Public Policy at Rutgers University.

We are currently working on a project in conjunction with the National Transit Institute, also at Rutgers University. Our research focuses on learning more about the workforce needs of the transit industry. Specifically, we aim to identify the specific challenges transit agencies face in maintaining a workforce with sufficient training, expertise, and professional opportunities. This research is particularly vital because as we know the workforce demands of our industry are ever evolving. The information we collect will support the efforts of the American Public Transportation Association (APTA), the Federal Transit Administration (FTA), and the industry to strengthen the transit workforce for the 21<sup>st</sup> century.

Today we want to hear directly from you, transit industry professionals, to learn about what you think of current and future transit workforce issues and how to address those issues (or, and the ways to promote a well-trained future workforce). Our session today is part of a series of focus groups we are holding at the APTA Bus Conference, APTA Rail Conference, and the CTAA Expo. We encourage you to draw on your own professional experiences as well as those you are aware of from within the industry.

Before we start I want to share with you some general guidelines for our discussion today:

- First, our discussion will last about 90 minutes.
- Feel free to visit the bathroom and/or move around whenever you need to.
- We ask that each of you participate as much as you feel comfortable doing; that you are kind and respectful of one another, even if you have different opinions, and that you turn off or lower your cell phones. And remember, let's have some fun!

Now, let's start by taking a few minutes right now to introduce ourselves.

Please tell us your **first name**, **who you work for**, and **your professional role**.

Now that we all know each other a little better, let's begin our discussion.

---

Today we would like to discuss two interrelated issues – 1) the **training needs** of the people working in transit industry and 2) the **workforce needs** of the transit industry overall.

Very simply, the issue of **training needs** is really about how we can make sure that people have the skills necessary to do their jobs safely and effectively. The transit industry comprises many different kinds of jobs -- from mechanics, operators, and cleaners to supervisors and planners, and all the way up to high-level management. I hope we can talk about the training needs of many of these positions over the course of our discussion.

The issue of **workforce needs** concerns how we can assure that there are enough capable and interested people available to work in the industry now and in the future and that those who currently work in the industry continue to do so. Education and training contribute to the strength of the workforce, but so do other factors (which I hope we will discuss).

## II. TRAINING (30 minutes)

Let's begin by talking about the training for front line positions. These positions include bus and paratransit operators, mechanics, and customer service representatives.

### a. Training Issues by Job Role

#### i. What are the current gaps in operator training and what do you see as potential gaps in the future?

##### 1. What are the skills that operators need currently and in the future?

- Operations and control
- Operation monitoring
- Communications
- Knowledge of systems (mechanical, electrical, and computer)
- New technologies and software
- Administration (reporting)
- Emergency operations (basic safety (CPR, first aid), evacuation, emergency response)
- Managing workplace stress

#### ii. What are the current gaps in mechanics training and what do you see as potential gaps in the future?

##### 1. What are the skills that mechanics need currently and in the future?

- Mechanical skills
- Electrical skills
- Computer skills
- New technologies (*high-speed rail, light rail, signals*)
- People skills/working with others

##### 2. How do you ensure staff are prepared for changing technology?

#### iii. What are the current gaps in customer service staff training and what do you see as potential gaps in the future?

##### 1. What are the skills that customer service staff need currently and in the future?

- People skills/working with others
- Supervisory/management
- Diversity/cultural sensitivity
- Increasing use of reservation and other software
- Managing workplace stress

**iv. What are the current gaps in other staff training and what do you see as potential gaps in the future?**

- Other job roles: professional job categories (planners, traffic analysts, marketing/public affairs, human resources, insurance & risk)

**1. What are the skills these staff need? What skills will these staff need in the future?**

**b. General Training Issues**

**i. What challenges do transit agencies or your agency specifically face when training personnel?**

- Lack of funding set aside
- Lack of training standards that result in time and/or monetary costs
- Lack of instructors
- Lack of interest from management or employees
- Lack of training materials
- Union rules/constraints
- Retention issue – too costly to train employees if they are going to leave

**ii. What can be done to improve training to serve current (and future) needs?**

- Partnerships (union, school, gov't, cross-industry collaboration)
- Additional resources/funding (Federal and other)
- Alternative training programs (apprenticeships, internships, certificates)
- On-the-job training
- Educating executives on the importance of training
- Certification/recognition/perks program for employees completing training program

**iii. Which partners should transit agencies or your agency specifically work with to improve their training efforts? In what ways can these partners help?**

- Educational partners – community colleges, K-12 schools
- Non-profit partners – APTA, local non-profits
- Governmental partners – FTA (funding), local government
- Unions
- Other regional transit agencies
- Other transportation industries

**iv. Optional: Are some training strategies more appropriate for some job categories (vehicle operators, mechanics, customer service) or for some workers (entry-level vs. experienced, older vs. younger workers)?**

- Online training
- On-the-job training
- Mentorship
- Classroom instruction

### III. WORKFORCE (30 minutes)

Let's shift gears now (no pun intended).

While training is about assuring that transit industry workers have the skills to perform their jobs safely and effectively, addressing workforce needs means making the effort to assure that we have the most appropriate people available to work in the industry now and in the future.

#### a. Recruitment

##### i. Generally what skills do you look for when hiring staff?

##### ii. What challenges does the transit industry face in recruiting its workforce?

- Negative perceptions of industry (monotony of work, low pay, high responsibility/high stress)
- Mechanics and skilled worker shortages
- Differences in skills/work habits between generations of transit workers
- Lack of interest among young workers
- Lack of understanding how to use new technologies
- Homogenous workforce

##### iii. What strategies can be used to address recruitment issues? How do we implement these strategies?

- Rebranding of agency
- Community outreach
- Marketing strategy
- Collaborate with K-12 and colleges to inform young people about careers
- Restructure compensation/perks
- Recruitment of non-traditional candidates

#### b. Retention

##### i. What challenges does the transit industry face in retaining its workforce? What are the consequences of these retention challenges on the transit workforce?

- High turnover rate / Losing staff to higher paying sectors, etc.
- Loss of industry-knowledge with retirement
- Dissatisfaction among remaining workers

##### ii. What strategies can be used to address retention issues? How do we implement these strategies?

- Training (new hires and recurring)
- Networking opportunities
- Recognition of good work
- Career ladder
- Additional skills development
- Improve work environment/cultural issues
- Restructure compensation/perks
- Organization planning
- Strategic planning
- Outgoing interview process

**iii. Can training be used to address recruitment and retention issues? How?**

**iv. What partners do you or your agency specifically work with for recruitment and retention? In what ways do these partners help?**

- Educational partners – community colleges, K-12 schools
- Non-profit partners – APTA, national/local non-profits, community groups
- Governmental partners – FTA, state/local government
- Unions
- National and local businesses
- Other transportation industries – trucking, auto industry
- Other transit agencies

**v. What constraints do transit agencies or your agency specifically face when trying to address the recruitment and retention challenges?**

- Insufficient funding
- Lack of industry standard/guidance for workforce strategies
- Little or no interest from management or from employees

**IV. CONCLUSIONS AND TAKEAWAYS (15 minutes)**

First, I want to thank you all for your time and your insights today.

Let me take a minute to let you know our next steps. After this, we will be conducting interviews with industry stakeholders. Please let us know if you would be interested in being interviewed or if there is someone who you would recommend we interview. Based on our analysis of the information we have gathered, we may conduct a survey of industry professions in the fall. Ultimately, we will have a report and recommendations we hope will help to improve training and workforce development for the industry.

[Assistant Moderator: Hand out one large index card to each participant.]

Finally, I'd like each of you to jot down up to three "bullet points" that tell us the three most important things we discussed today or that we should have discussed but did not. Just put down up to three points, thoughts, or ideas on these index cards.

[Optional: Please add one addition "bullet point" that specifically concerns the training, recruitment, and retention of millennials.]

Again, thank you for your time today. This has been a very productive discussion. We have learned a lot.

APPENDIX  
**2**

# Structured Telephone Interview Topic Guide

## About You

1. Please tell us your current job position at (fill in) agency.
2. For how long have you worked in this capacity?
3. Can you please briefly describe your primary job responsibilities? How do your job responsibilities relate to training, recruitment, etc.?

## Transit industry skill gaps—what are they?

We would like to begin our conversation today by discussing gaps – specifically skill gaps in the transit industry. Then we would like to direct our conversation to potential strategies for addressing those gaps.

4. From your experience, where do the most significant skills gaps in the transit industry currently exist?
  - a. What types of skills gaps currently dominate the industry?
    - Soft skills? (for example, oral/written communication, flexibility, work ethic/professionalism, motivation, interpersonal skills)
    - Hard skills? (for example, technical/technological skills, computer skills, commercial driving skills, basic maintenance capabilities, etc.)

Regarding technical/technological skill gaps, is the issue that technology changes too rapidly for workers to successfully adapt without difficulty? Or is the opposite true...are workers struggling with using and maintaining out-of-date technologies?

- Are there other types of skills gaps we haven't discussed?

5. As you are aware, the transit industry comprises many different kinds of jobs—dispatchers, mechanics, operators, maintenance, engineers, supervisors and planners, all the way up to high-level management. Are the skills gaps more significant or apparent in certain job roles compared to others?
6. Do you see the skill gaps you identified as short-term? OR do you instead feel they are long lasting gaps that will continue into the future? Or put another way, has the transit industry always been playing catch up? Is this nothing new?

7. What factors do you think have created and/or fostered the existing skill gaps in the industry?

**Transit industry skill gaps—what strategies can we pursue to address these gaps?**

8. What strategies has your agency pursued to address the gaps you have discussed with us? (internship programs, apprenticeships, other?)
- a. Are there other strategies you think your agency and others facing similar skills gaps should consider pursuing to address the situation?
  - b. Are you aware of other strategies being undertaken by agencies in the U.S. or abroad to address transit industry skill gaps?
9. Do you think there are core competencies that are needed in the transit industry?
10. I would like to focus the remainder of our conversation on strategies for training. Obviously, training is one key way in which skill gaps can be addressed. There are many factors and issues associated with training and we would like to get your feedback on some of these factors:
- a. What is the largest obstacle to transit industry training? (funding? employee buy-in? senior management buy-in? concern with poaching of trained employees? other?)
  - b. In terms of priorities, what are the current top job roles in the industry that you think need more training opportunities? (operators? mechanics? dispatchers? management? technical employees? other?)
    - Do you see a strong need for basic competency training – e.g. oral and written communication, customer service, etc.?
  - c. How should agencies promote training? Should incentives be offered (for example, certification/recognition/perks program)? We heard a great deal in our focus groups about the benefits of partnerships in terms of training – partnerships with the education sector (primary schools, community colleges, four-year colleges, vocational schools) unions, government partners (FTA), non-profit entities (APTA), other transit agencies, and other transportation sectors (auto, trucking, freight rail).
  - d. Do you have any experience with working with a partner to create or implement training? What are your thoughts on partnering? What are the challenges in partnering?
  - e. Finally, we discussed a few moments ago the topic of offering incentives as one means to promote training. What do you think about using incentives as a strategy to also promote retention? What

types of incentives do you think could be successfully employed to assist with retention efforts?

- f. What other strategies should the transit industry be utilizing to foster retention? (for example, offer competitive benefits; top-down recognition efforts; promote from within; pay raises?)

Note: If time or the conversation is not robust, we can ask these three additional specific questions on training:

- g. What are your thoughts/experiences related to in-house vs. external training?
- h. How frequently should training be offered? Should it be continuous?
- i. Do you think training delivery mode (e.g. online vs. in-person) is a significant factor in training success?

### Conclusion

11. Today we focused primarily on discussing transit industry skills gaps and potential strategies to address those gaps. Are there other issues that we did not discuss that you feel are critical to meeting the current and future workforce needs of the transit industry? (for example, recruitment issues, retention issues, office culture/environment issues, other?)
12. Is there anyone else in your agency or elsewhere you suggest we interview for this study?

End.

### **NOTE: The following additional questions will be asked of interviewees representing transit unions.**

1. From a union perspective, what do you see as the great workforce challenge facing the transit industry today and in the future?
2. What are the main concerns of the workers you represent in terms of skill gaps?
3. Are the workers you represent generally open to training opportunities?
  - a. What are the obstacles they encounter when they seek training?
4. Has your union ever directly offered training to the transit workers you represent? If yes, please provide detail.
  - a. What worker roles did you provide training for?
5. Have you ever partnered with a transit agency or another entity to offer training? If yes, please provide detail.

# Focus Group Observations

## Training Techniques by Mode

### Bus

- Current employees can opt-in to get continuous training to be certified in certain skills that will help them throughout their careers.
- Agencies use a combination of in-house and external trainings, the difference depends on the amount of funding available.
- For mechanics, some agencies offer tank inspection training.
- Some agencies offer training programs for people who hold an associate's degree. This enables the agency to train the employee in a specialized role.
- Training for fare box maintenance and use is best when the manufacturer conducts it.
- Some agencies design their training programs so that the mechanic can repair just about any part of the vehicle.
- The Transit Ambassador program from the Canadian Urban Transit Association is a good customer service training program for bus drivers.
- The method of training—hands-on, role-play, on bus, or in-class—depends on the training material.
- Some agencies offer monthly training on safety procedures.
- There was agreement among all participants that collaboration with the union (if present) is beneficial for training.
- Some agencies require that all positions within the agency must ride the bus at least one time so that they can experience what a driver deals with daily.
- In some agencies, supervisors each monitor the on-board cameras for a set of drivers. The observation helps them determine the areas that the driver needs to improve upon and provide training individually.
- For drivers/mechanics, when a new technology is introduced to the fleet, everyone receives a quick training on how to use that technology.
- Agencies use regulations and requirements from funders to determine the topics that will be covered in training.
- Some agencies have a continuous training program that involves one-hour monthly training.
- Training for mechanics is often done on the job.

- For skills that cannot be trained such as promptness and customer service, agencies use rewards and other positive reinforcements to alter employee's behavior.

## Rail

- Agencies prefer to develop their own training as opposed to using a grant to get a university center to conduct the training.
- Agencies use the Transportation Learning Center to develop a training program and then the agency facilitates it themselves.
- A transit training consultant shared information on training program management and training in technical fields, client relations, and marketing by his organization.
- Operators participate in mandatory training every couple of years and then have the option to take other trainings.
- The California Association of Public Procurement Officials (CAPPO) and an NTI training course offer training for transit procurement officers to understand regulations.
- The location for training for train control persons and track engineers depends on the need of the agency. Some agencies have the facilities to conduct the training on site, and some agencies have to use a central training facility.
- Union Pacific Railroad offers a strong railroad signal training.
- Agencies agreed that the method of training is not as important as the content included in the training.
- Agencies agreed that the training offered today is better than that offered in the past.
- Concern was expressed that the American model of training is inadequate, as other countries move more people and more quickly and without as many mishaps.
- Agencies will accept employees with any engineering degree or highway degree and train them internally to be proficient in some capacity on the railroad team.
- NTI training for fare collection is used.
- To fulfill agency needs, an agency needs to re-train existing workforce who are used to working with older systems and training an entering workforce.
- The National Institute of Government Procurement offers a procurement training course.
- The University of Chicago offers an 18-month program with a final exam that certifies transit employees to become a professional public buyer or professional public officer.

- Agencies use the Transit Safety Institute for training on understanding regulations.
- Agencies agreed that transit safety training is better conducted in the classroom at the agency site so participants can go outside and observe the safety of their own fleet and facility.
- Agencies use Employee Assistant Program training to help employees understand that they will not be terminated if they make a mistake.
- Agencies agreed that APTA leadership training is helpful.

### Community Transportation / Paratransit

- Training is provided when new technologies enter the agency.
- Agencies agreed that other dispatchers are best conduct training for dispatchers rather by software scheduling companies.
- Some agencies require employees to complete final exam that demonstrates their competency in the material.
- A rural transit authority is creating a clearinghouse of transit training programs for other agencies in the area as a way to standardize training.
- Agencies use regulations and requirements from funders to determine the topics covered in training.
- Training programs for new employees typically occurs over a 2-6-week period.
- Agencies use sensitivity training to prepare drivers for dealing with elderly and disabled persons.
- First aid training occurs annually.
- Customer service, defensive driving, dealing with disruptive passengers were all training topics participating agencies offered.

## Training Techniques by Agency Size

### Small Agencies

- One organization conducts monthly safety training and conducted assault awareness training for drivers.
- Some small agencies have drivers go through emergency management training, which occurs on a bus with role-playing and calling dispatch.
- Training for over 300 drivers can be broken into groups of five and can take about a month.
- Although an agency may not have a continuous training plan for employees, it looks at its data and provides as-needed training.
- Everybody within one agency has to ride the bus with drivers so they can learn how the industry works on the ground.

- Within the rail industry, agencies may lack the trained staff needed for two reasons: existing mechanics need training and industry needs to bring in new mechanics.
- One agency developed a community awareness campaign that explains to residents how the community transit system works because they were treating it as a taxicab service.
- A program conducts all training for the 5311 and 5310 agencies in the state for free. The training includes emergency evacuations, pre-trip, customer service, stress, and fatigue.
- Training periods are used as time to get to know drivers and work on any personality issues that they may have (lateness, anger, lack of interest).
- Sensitivity training for drivers typically involves role-playing.
- First aid, defensive driving, bell treatment awareness, and other pre-trip trainings may be required every three years because of State requirements.
- Agency mechanics go through training on how to diagnose camera system failures.
- Training for new drivers is a combination of in-class, role-play, and on-bus training.
- One agency is working on a singular website for the state with all training products available to any agency.

### Large Agencies

- The Transit Ambassador Training program offered by the Canadian Urban Transit Association is a great customer service training program for drivers.
- One agency conducts monthly training programs for drivers and mechanics on the new technologies.
- The size and technical capacity of a training facility can limit the type of training the agency can conduct in-house.
- Mechanics coming out of a technical trade school do not have the skills that the transit agency actually needs.
- A training department at one agency offers special trainings that mechanics can go through to get certified.
- The ability of a transit agency to alter the training material that comes from a training institute or manufacturer is dependent on each organization, so agencies are limited in their ability to make the training specific to their needs.
- One agency offers an apprenticeship program specific for persons with associate's degrees, in which the transit agency specializes that person's skill instead training them starting with the basics.

- Mechanics are trained to work on all aspects of the vehicle not just specific parts.
- Participants discussed having to purchase vehicles from different manufacturers due to FTA procurement regulations and noted that the rule makes it difficult to train mechanics because the fleets are different.
- There is a need for training on railroad signaling, basic wiring, and fiber splicing for railroad staff.
- There may be staff reluctance to report near-misses (accidents), resulting in the agency being unable to train in areas where there is a need for improvement.
- Participants agreed that the National Institute of Government Procurement offers a better training program than NTI for procurement officers.
- Participants use the Transit Safety Institute trainings for various topics.
- APTA Leadership training is a good training program for leaders of transit agencies.
- Participants felt that training in the transit industry should be conducted in a way that teaches people how to work in multiple roles and build a sense of employee ownership.
- There needs for better management training for mid- and senior-level managers.
- Staff may not be receiving as much training as needed because agencies train only to the level required by funders and not necessarily the training that would be warranted by the gaps in performance.
- Some consultant firms offer training management, technical skills training, and marketing training for agencies.
- An agency offers refresher training every couple of years and then optional trainings at random for drivers/mechanics.
- An agency offers educational development programs to people in the community when they have a big transit project, although there is concern that the career development is not ideal.
- Participants agreed that Union Pacific Railroad offers the best signal training.
- Some state DOTs monitor the training program agencies use to ensure quality; others do not.
- Participants were split on deciding which type of training for dispatchers—mentor-dispatcher or software developer lead training—was better for new dispatchers.
- Participants felt that drivers are getting more diversity training.
- Some agencies do not have state transit training standards and are in the process of developing them.

APPENDIX

# 4

# Survey Recruitment Protocol

**Contact 1: Email from NTI Director as sent by NTI**

Dear NTI Colleague:

Tomorrow, researchers from the Alan M. Voorhees Transportation Center at Rutgers University will contact you and your staff to request participation in an online survey for the Transit Industry Training Needs Assessment study for the National Transit Institute (NTI).

I am writing in advance because we have found that many people like to know ahead of time when they will be contacted.

The primary study goals are to:

- Identify and assess the current and future training needs of the transit industry
- Examine issues of employee retention and recruitment, as they relate to training
- Inform the work of those who conduct and support training of transit industry professionals

You and/or your staff will receive an email with a link to the survey within the next few days. The online survey will only take about 20 minutes to complete, and is completely confidential; the results of the study will be presented in aggregate format only and no individual participant will ever be identified in any report.

I would be grateful if you and your staff would assist us in this vital effort by completing this survey. We need to hear from many voices representing many different staff positions to get a robust understanding of the diverse training needs of the transit industry.

Thank you for your time and consideration. It's only with the help of people like you that this important research can be successful. If you have any questions or concerns, please do not hesitate to contact me at 848-932-6047 or at [bterry@nti.rutgers.edu](mailto:bterry@nti.rutgers.edu).

Sincerely,  
Billy Terry

Director  
National Transit Institute  
Rutgers, The State University of New Jersey  
120 Albany Street, Tower Two, Suite 250  
New Brunswick, NJ 08901-2130  
[www.ntionline.com](http://www.ntionline.com)



**Contact 2: Invite Email from Principal Investigator as sent by VTC**

Dear NTI Colleague,

I am writing to kindly request your participation in an online survey for the Transit Industry Training Needs Assessment study for the National Transit Institute (NTI).

The goal of this research is to identify and assess the current and future training needs of the transit industry; examine issues of employee retention and recruitment, as they relate to training; and inform the work of those who conduct and support training of transit industry professionals. Our apologies in advance if you receive more than one invitation to participate in the survey. We are also working with APTA and CTAA to ensure we hear from many viewpoints.

The study is completely confidential and your answers will not be associated with your name or your agency or employer when the results are reviewed.

This online survey will only take about 20 minutes to complete. However, if you are unable to complete it in one sitting, you may complete it at a later time; the study will save your answers and when you return, it will pick up right where you left off.

**Follow this link to the Survey:**

[\\${://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser:

[\\${://SurveyURL}](#)

If you have any questions or concerns about the study, please do not hesitate to contact me at 848-932-2859 or at [rnoland@ejb.rutgers.edu](mailto:rnoland@ejb.rutgers.edu).

Thank you again for participating in this important effort. We are very grateful for your willingness to share your time and experience.

Sincerely,  
Robert B. Noland, PhD

Study Principal Investigator  
Distinguished Professor of Transportation Planning and Policy  
Director, Alan M. Voorhees Transportation Center



Follow the link to opt out of future emails:

[\\${://OptOutLink?d=Click here to unsubscribe}](#)

**Contact 3: One Week Reminder from Principal Investigator as sent by VTC**

Dear NTI Colleague,

I am writing to follow up on my recent email in which I asked for your help in an online survey for the NTI Transit Industry Training Needs Assessment study. We've received a substantial number of responses so far and if you have already participated, please accept my sincere thanks.

Your input is important to us, and if you have not yet had the chance to participate in this confidential study, I am hopeful that you could take a few moments to do so now.

**To complete the survey, please follow this link:**

[\\${://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser: [\\${://SurveyURL}](#)

If you have any questions or concerns about the study, please do not hesitate to contact me at 848-932-2859 or at [rnoland@ejb.rutgers.edu](mailto:rnoland@ejb.rutgers.edu).

Thank you again for participating in this important effort. We are very grateful for your willingness to share your time and experience.

Sincerely,  
Robert B. Noland, PhD

Study Principal Investigator  
Distinguished Professor of Transportation Planning and Policy  
Director, Alan M. Voorhees Transportation Center



Follow the link to opt out of future emails:  
[\\${://OptOutLink?d=Click here to unsubscribe}](#)

**Contact 4: Three Week Reminder from Principal Investigator as sent by VTC**

Dear NTI Colleague,

About three weeks ago, I wrote to ask for your kind participation in an online survey for the NTI Transit Industry Training Needs Assessment study. If you have already completed the survey, please accept our sincere thanks.

If you have not yet had time, or have started but not finished the survey, I would be very grateful if you could take a few moments to complete the survey now. The study is completely confidential and only takes about 20 minutes. And, if you are restarting an already-begun survey, all your earlier answers are saved, so it will pick up right where you left off.

**To participate, please follow this link to the Survey:**

[\\${://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser:

[\\${://SurveyURL}](#)

If you have any questions or concerns about the study, please do not hesitate to contact me at 848-932-2859 or at [rnoland@ejb.rutgers.edu](mailto:rnoland@ejb.rutgers.edu).

Thank you again for participating in this important effort. We are very grateful for your willingness to share your time and experience.

Sincerely,  
Robert B. Noland, PhD

Study Principal Investigator  
Distinguished Professor of Transportation Planning and Policy  
Director, Alan M. Voorhees Transportation Center



Follow the link to opt out of future emails:

[\\${://OptOutLink?d=Click here to unsubscribe}](#)

**Contact 5: Final Reminder from Principal Investigator as sent by VTC**

Dear NTI Colleague,

I am writing one last time in the hope that you will be able to participate in an online survey for the NTI Transit Industry Training Needs Assessment study. We've received a significant number of responses to the study, and are hopeful that your input will be included in the final results we will use to make recommendations to benefit future transit industry training and staffing.

This portion of the study will close at midnight on Friday, June 21, 2019 and so if you've not yet had the opportunity to complete the survey, I ask that you take a few minutes to do so now.

**Follow this link to the Survey:**

[\\${://SurveyLink?d=Take the Survey}](#)

Or copy and paste the URL below into your internet browser:

[\\${://SurveyURL}](#)

If you have any questions or concerns about the study, please do not hesitate to contact me at 848-932-2859 or at [rnoland@ejb.rutgers.edu](mailto:rnoland@ejb.rutgers.edu).

We are very hopeful that you will have a few moments to include your voice in this important study. Please know that we appreciate your help.

Sincerely,  
Robert B. Noland, PhD

Study Principal Investigator  
Distinguished Professor of Transportation Planning and Policy  
Director, Alan M. Voorhees Transportation Center



Follow the link to opt out of future emails:

[\\${://OptOutLink?d=Click here to unsubscribe}](#)

APPENDIX

# 5

## Survey Questionnaire

# Survey Questionnaire

## TRAINING & WORKFORCE NEEDS ASSESSMENT TRANSIT INDUSTRY SURVEY 2019

---

Start of Block: Training & Workforce Needs Assessment Transit Industry Survey

### 0 ABOUT THE STUDY

You are invited to participate in research for the National Transit Institute being conducted by the Bloustein School's Alan M. Voorhees Transportation Center at Rutgers University to advance NTI's mission to provide training, education, and clearinghouse services in support of public transportation and quality of life in the United States. The research team is seeking to learn more about the workforce needs of the transit industry. Specifically, we aim to identify the specific challenges transit agencies face in maintaining a workforce with sufficient training, expertise, and professional opportunities.

This survey should take you approximately 15-20 minutes to complete. Your participation in the survey is completely voluntary and there are no risks to participation. You may skip any questions you are not comfortable answering. If at any time you wish to stop participating you are free to do so with no penalty to you. This research is confidential. Confidential means that the research records will include some information about you, such as your title. However, the research team and the Institutional Review Board at Rutgers University are the only parties that will be allowed to see the full set of data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for three years.

If you have any questions at any time about the research or the procedures described above, or if you need assistance in completing the survey, you may contact the study principal investigator:

Robert Noland, Ph.D.

tel: 848-932-2859

email: [rnoland@ejb.rutgers.edu](mailto:rnoland@ejb.rutgers.edu)

If you have any questions about your rights as a participant in this study, you may contact:

Rutgers University Institutional Review Board for the Protection of Human Subjects

Office of Research and Sponsored Programs

335 George Street, Liberty Plaza, 3rd Floor, Suite 3200

New Brunswick, NJ 08901

tel: 732-235-2866

email: [human-subjects@ored.rutgers.edu](mailto:human-subjects@ored.rutgers.edu)

### Informed Consent

- Yes.** I consent to take the survey
- No.** I do not consent to take the survey

End of Block: Training & Workforce Needs Assessment Transit Industry Survey

---

Start of Block: A. INTRODUCTION

Q1 What is the name of your agency? *(Fill in)*

---

---

Q2 Which mode(s) does your agency operate? *(Select all that apply)*

- Commuter Rail (CR)
- Heavy Rail (HR)
- Hybrid Rail (YR)
- Light Rail (LR)
- Streetcar Rail (SR)
- Other Rail Mode (fill in) \_\_\_\_\_
- Commuter Bus (CB)
- Bus (MB)
- Bus Rapid Transit (RB)
- Demand Response (DR)
- Demand Response—Taxi (DT)
- Ferryboat (FB)
- Vanpool (VP)
- Other Non-Rail Mode (fill in) \_\_\_\_\_

---

Q3 How large is the service area of your transit agency? *(Select one)*

- More than 5000 square miles
- From 2,000 to 4,999 square miles
- From 500 to 1,999 square miles
- Less than 500 square miles

---

Q4 How large is the population in your service area? *(Select one)*

- More than 1,000,000
- From 200,000 to 999,999
- From 50,000 to 199,999
- Less than 50,000

---

Q5 What is your job title? *(Fill in)*

\_\_\_\_\_

---

Q6a Is your current position considered Operations or Administrative? *(Select one)*

- Operations
- Administrative
- Both Operations and Administrative
- Don't know

---

Q6b Which of these functions describes your current position? *(Select all that apply)*

- Reservationist and/or Customer Service:** Train Reservation Clerk, Passenger Relations Representative
- Dispatcher:** Bus Dispatcher, Train Dispatcher, Demand Response Dispatcher
- Vehicle Operator:** Bus Driver, Paratransit Vehicle Operator; Brake, Signal or Switch Operator; Yardmaster; Rail Operator (Commuter, Heavy Rail, Subway, Light Rail, Streetcar)
- Passenger Attendant:** Transportation Aide; Train Conductor

- Vehicle, Track & System Maintainer:** Bus Mechanic; Rail Car Repairer; Machinist; Signal, Track, and Switch Repairs
- Vehicle Servicer:** Cleaner of Vehicles & Equipment; Vehicle Fueler
  - First-Line Supervisor:** Bus Traffic Controller; First-Line Supervisor of Mechanics & Repairers
- Technical Operations Trainer:** Technical Operations Trainer; Training Supervisor
- Security & Safety:** Police Officer; Security Manager; Safety Officer
- Other OPERATIONS (fill in)** \_\_\_\_\_
  
- Executive or Management:** Chief Financial Officer; General Operations Manager
- Transit Service Planning:** Route Planner, Scheduling Manager
  - Procurement, Equipment Planning & Purchasing:** Purchasing Manager, Contract Specialist
- Long-Range Planning:** Transportation Planner; Capital Planning
- Consumer Service & Sales:** Customer Service Representative; Fare Sales Agent
- Marketing & Public Affairs:** Communications Representative; Marketing Manager
- Human Resources:** Talent & Employment Manager; Benefits Manager; EEO Officer
- Administrative & Support:** Office Manager
- Professional Development:** Training & Development Manager; Training Specialist
- Finance & Accounting:** Internal Auditor; Accounting or Budgeting Supervisor
- Legal:** General Counsel; Real Estate Asset Manager
- Insurance & Risk Management:** Manager of Risk & Loss; Claims Representative
- Information Technology:** Information Technology Manager; IT Specialist
  - Facilities & Property Management:** Facilities/Property Manager; Building or Station Maintenance Technician
- Engineering:** Systems Engineer, Construction Manager
- Other ADMINISTRATION (fill in)** \_\_\_\_\_

-----

Q7 How long have you worked in the transit industry? *(Select one)*

- More than 20 years
- 10 to 20 years
- 5 to 10 years
- 2 to 5 years
- Less than 2 years

-----

Q8 Do you interact directly with the public as part of your job? *(Select one)*

- Yes
- No

-----

Q9 How are you involved with training employees at your agency? *(Select all that apply)*

- Participate in training
- Trainer
- Determine who receives training
- Set training budgets
- Develop training materials, programs, or curricula
- Other (fill in) \_\_\_\_\_

- Not involved in training
- 

Q10 How are you involved with recruitment and/or hiring of new employees for your agency?  
(Select all that apply)

- Determine staffing levels  
 Design or develop recruitment strategies, policy or materials  
 Recruitment  
 Hiring process  
 Other (fill in) \_\_\_\_\_  
  Not involved with recruitment or hiring

End of Block: A. INTRODUCTION

---

Start of Block: B. TRAINING NEEDS (Q11-18b)

Q11 Who typically trains staff at your agency? (Select all that apply)

- Equipment vendors  
 External courses (e.g., those provided by NTI, APTA, or TLC)  
 In-house trainers  
 Job shadowing  
 Mentoring  
 Other transit agencies  
 Outside training contractors  
 Technical schools or community colleges  
 Other (fill in) \_\_\_\_\_
- 

Q12 How do staff at your agency typically receive training? (Select all that apply)

- On-line courses  
 In person at my agency  
 In person off-site at another location  
 Other (fill in) \_\_\_\_\_
- 

Q13a Does your agency experience any issues that limits its ability to provide training? (Select one)

- Yes  
 No
- 

Q13b What limits your agency's ability to provide training? (Select all that apply)

- Hard to schedule time off or time away from job for employees to train  
 Lack of appropriate training materials  
 Lack of available training courses  
 Lack of training options (e.g. virtual classes, webinars, classroom instruction)  
 Lack of employee interest or engagement  
 Lack of resources/funding  
 Lack of trainers and/or expertise to provide training  
 Unaware of available training courses  
 Other (fill in) \_\_\_\_\_

---

Q14a Select the three job areas in Operations at your agency that you think are most in need of additional training? (*Select three*)

- Reservationist and/or Consumer Service
  - Dispatcher
  - Vehicle Operator
  - Passenger Attendant
  - Vehicle, Track & System Maintainer
  - Vehicle Servicer
  - First-Line Supervisor
  - Technical Operations Trainer
  - Security & Safety Positions
  - Other Operations job area (fill in)
- 
- No, there are no Operations job areas in need of additional training
- 

Q14b Select the three Administrative job areas at your agency that you think are most in need of additional training? (*Select three*)

- Executive or Management
  - Transit Service Planning
  - Procurement, Equipment Planning & Purchasing
  - Long-Range Planning
  - Consumer Service & Sales
  - Marketing & Public Affairs
  - Human Resources
  - Administrative & Support
  - Professional Development
  - Finance & Accounting
  - Legal
  - Insurance & Risk Management
  - Information Technology
  - Facilities & Property Management
  - Engineering
  - Other Administrative job areas (fill in)
- 
- No, there are no Administrative job areas in need of additional training
- 

Q15 Has your agency worked with any of the following educational partners for training and/or recruitment? (*Select all that apply*)

- Primary schools
- High schools
- Community colleges
- Four-year colleges
- Vocational technical or vocational school
- No, my agency has not worked with any educational partners

---

Q16 Has your agency worked with any of the following partners for training and/or recruitment?  
(Select all that apply)

- Federal, state, or local government entities
  - Nonprofits
  - Other transit agencies
  - Unions
  - Other (fill in) \_\_\_\_\_
  - No, my agency has not worked with any partners
- 

Q17a Does your agency's current workforce have the right skills? (Select one)

- Yes
  - No
- 

Q17b Which skills are most lacking among your agency's current workforce? (Select all that apply)

- Vehicle maintenance skills
  - Leadership and/or supervisory skills
  - Effective communication skills, written and/or oral
  - Compliance skills
  - Project management skills
  - Time management skills
  - Computer skills
  - Technical skills (e.g., engineering, IT, etc.)
  - Customer services skills
  - Conflict resolution skills
  - Work readiness skills (e.g., professionalism, punctuality, dress codes)
  - Other (fill in) \_\_\_\_\_
- 

Q18a Which Operations job positions at your agency need increased training on new technologies? (Select all that apply)

- Reservationist and/or Consumer Service
  - Dispatcher
  - Vehicle Operator
  - Passenger Attendant
  - Vehicle, Track & System Maintainers
  - Vehicle Service Area
  - First-Line Supervisor
  - Technical Operations Training
  - Security & Safety Positions
  - Other Operations job area (fill in) \_\_\_\_\_
  - No increased training on new technologies is needed at my agency
- 

Q18b Which Administrative job positions at your agency need increased training on new technologies? (Select all that apply)

- Executive or Management
  - Transit Service Planning
  - Procurement, Equipment Planning & Purchasing
  - Long-Range Planning
  - Consumer Service & Sales
  - Marketing & Public Affairs
  - Human Resources
  - Administrative & Support
  - Professional Development
  - Finance & Accounting
  - Legal
  - Insurance & Risk Management
  - Information Technology
  - Facilities & Property Management
  - Engineering
  - Other Administrative Job Role (fill in)
- 
- No increased training on new technologies is needed at my agency

End of Block: B. TRAINING NEEDS (Q11-18b)

---

Start of Block: C. RECRUITMENT (Q19-21)

Q19a Please indicate whether it is easy or difficult to recruit for the following Operations positions. Use Not Applicable (NA) if the position does not exist at your agency.

	Easy	Somewhat Difficult	Difficult	Not Applicable (NA)
Reservationist and/or Consumer Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dispatcher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle Operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Passenger Attendant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle, Track & System Maintainer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle Servicer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
First-Line Supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Security & Safety Positions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical Operations Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (fill in)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q19b Please indicate whether it is easy or difficult to recruit for the following Administrative positions. Use Not Applicable (NA) if the position does not exist at your agency.

	Easy	Somewhat Difficult	Difficult	Not Applicable (NA)
Executive or Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit Service Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement/Equipment Planning & Purchasing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long-Range Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumer Service & Sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marketing & Public Affairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative & Support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finance & Accounting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insurance & Risk Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilities Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (fill in)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q20a Does your agency experience any barriers or challenges to recruiting new staff? (*Select one*)

- Yes
- No

Q20b What are the barriers or challenges to recruiting new staff to your agency? *(Select all that apply)*

- Not sure where to find qualified candidates
- Lack of sufficient outreach
- High-stress work environment
- Non-competitive benefits
- Non-competitive wages
- Candidate pool lacks basic work skills/professionalism
- Insufficient educational programs that prepare persons to work in transit agencies
- Non-standard work hours (evenings, nights, weekends, split shift)
- Potential workforce lacks knowledge of transit industry jobs and/or career path
- Other (fill in) \_\_\_\_\_

Q21 Of the following strategies, which has your agency successfully used for recruitment generally and to recruit younger workers specifically?

	Used Successfully by Agency Generally	Used Successfully by Agency to Recruit Younger Workers
Advertising	<input type="radio"/>	<input type="radio"/>
Apprenticeships	<input type="radio"/>	<input type="radio"/>
Benefits package	<input type="radio"/>	<input type="radio"/>
Flexible work arrangements, including telework	<input type="radio"/>	<input type="radio"/>
Free or paid training for Commercial Driver's License (CDL)	<input type="radio"/>	<input type="radio"/>
Internships	<input type="radio"/>	<input type="radio"/>
Job fairs	<input type="radio"/>	<input type="radio"/>
Online application	<input type="radio"/>	<input type="radio"/>
Partnering with educational sector	<input type="radio"/>	<input type="radio"/>
Recruitment from other companies and/or industries	<input type="radio"/>	<input type="radio"/>
Referrals from current employees	<input type="radio"/>	<input type="radio"/>
Targeted recruitment of veterans and/or minority populations	<input type="radio"/>	<input type="radio"/>
Temporary agencies	<input type="radio"/>	<input type="radio"/>
Tuition assistance	<input type="radio"/>	<input type="radio"/>
Other (fill in)	<input type="radio"/>	<input type="radio"/>

End of Block: C. RECRUITMENT (Q19-21)

Start of Block: D. RETENTION (Q22-23)

Q22a Please indicate whether it is easy or difficult to retain staff in the following Operations positions. Use Not Applicable (NA) if this position does not exist at your agency.

	Easy	Somewhat Difficult	Difficult	Not Applicable (NA)
Reservationist and/or Consumer Service	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dispatcher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle Operator	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Passenger Attendant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle, Track & System Maintainer	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Vehicle Service Area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
First-Line Supervisor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Security & Safety Position	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technical Operations Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (fill in)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q22b Please indicate whether it is easy or difficult to retain staff in the following Administrative positions. Use Not Applicable (NA) if the position does not exist at your agency.

	Easy	Somewhat Difficult	Difficult	Not Applicable (NA)
Executive or Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit Service Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Procurement, Equipment Planning & Purchasing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Long-Range Planning	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumer Service & Sales	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Marketing & Public Affairs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Human Resources	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Administrative & Support	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Professional Development	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Finance & Accounting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Legal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Insurance & Risk Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information Technology	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Facilities Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Engineering	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (fill in)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q23 Of the following strategies, which has your agency found to be effective for retaining staff generally and retaining younger workers specifically?

	Effectively Used by Agency Generally	Effectively Used by Agency to Recruit Younger Workers

Accelerated career progress within agency	<input type="radio"/>	<input type="radio"/>
Benefits package	<input type="radio"/>	<input type="radio"/>
Career pathways	<input type="radio"/>	<input type="radio"/>
Employee awareness of pay increase policies	<input type="radio"/>	<input type="radio"/>
Employee awareness of positive community impact of agency	<input type="radio"/>	<input type="radio"/>
Flexible work schedule/hours	<input type="radio"/>	<input type="radio"/>
Frequent internal communications among all staff	<input type="radio"/>	<input type="radio"/>
Green/new technology use	<input type="radio"/>	<input type="radio"/>
Job shadowing	<input type="radio"/>	<input type="radio"/>
Leadership development	<input type="radio"/>	<input type="radio"/>
Mentorship	<input type="radio"/>	<input type="radio"/>
Positive and/or supportive culture within agency	<input type="radio"/>	<input type="radio"/>
Professional development	<input type="radio"/>	<input type="radio"/>
Succession planning	<input type="radio"/>	<input type="radio"/>
Tuition assistance	<input type="radio"/>	<input type="radio"/>
Other (fill in)	<input type="radio"/>	<input type="radio"/>

End of Block: D. RETENTION (Q22-23)

---

Start of Block: E. TRAINING QUESTIONS BY JOB CLASSIFICATION

The following questions are designed to gather more detail about the training needs of specific transit industry positions and job areas. We seek information on the areas where training has been insufficient.

If you are not familiar with the training needs for the specific position or job area, please answer "Don't know".

End of Block: E. TRAINING QUESTIONS BY JOB CLASSIFICATION

---

Start of Block: E1. TRAINING QUESTIONS-OPERATIONS (Q24-37)

Q24 Which of the following Customer Service trainings are most needed by Vehicle Operators at your agency? (Select all that apply)

- Basic Customer Relations
  - Communicating with the Public
  - Conflict Resolution
  - Diversity Training
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q25 Which ADA-related trainings are most needed by Vehicle Operators at your agency? (Select all that apply)

- General Disability Awareness Training
  - ADA Compliance
  - Lift, Ramp, and/or Bridge Plate Operations
  - Securement of Mobility Devices
  - Medicaid Training Requirements
  - Serving consumers with mental health or cognitive disorders
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q26 Which Emergency Response trainings are most needed by Vehicle Operators at your agency? (Select all that apply)

- First Aid and CPR Training
  - Emergency Response and/or Crisis Management
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q27 Which of the following Workplace Skills trainings are most needed by Vehicle Operators at your agency? (Select all that apply)

- Verbal Communication Skills
  - Written Communication Skills
  - Computer Skills
  - Workplace Diversity Awareness
  - Conflict Resolution
  - Time Management
  - Work Readiness Skills
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q28 Are there other areas of training that are needed by Vehicle Operators at your agency? (Please specify)

---

---

---

---

---

Q29 Which of the following Operations trainings are most needed by Bus and/or Paratransit Operators at your agency? *(Select all that apply)*

- Operation of New Vehicles
- Operation of Alternative Fuel Buses
- Fare Collection Systems
- Communication Systems
- Vehicle Location Systems
- Basic maintenance skills to troubleshoot mechanical issues
- Other (fill in) \_\_\_\_\_
- Don't know

Q30 Which Operations trainings are most needed by Rail Operators at your agency? *(Select all that apply)*

- Radio Systems Operations & Communications
- Signal Operations
- Onboard Diagnostic Software and Computing Systems Operations
- Positive Train Control
- Fare Collection Systems
- Vehicle Location Systems
- Other (fill in) \_\_\_\_\_
- Don't know

Q31 Which of the following Workplace Skills training are most needed by Vehicle, Track & System Maintainers at your agency? *(Select all that apply)*

- Verbal Communication Skills
- Written Communication Skills
- Computer Skills
- Workplace Diversity Awareness
- Conflict Resolution
- Time Management
- Work Readiness Skills
- Other (fill in) \_\_\_\_\_
- Don't know

Q32 Which of the following other kinds of training are most needed by Vehicle, Track & System Maintainers at your agency? *(Select all that apply)*

- Operator Training (CDL)
- Emergency Management Training
- Environmental Compliance Training
- Supervision or Leadership Training
- Trainer Development
- Procurement Training
- Other (fill in) \_\_\_\_\_
- Don't know

Q33 Are there other areas of training that are needed by Vehicle, Track & System Maintainers at your agency? *(Please specify)*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Q34 Which of the following Technical trainings are most needed by Bus and/or Paratransit Maintainers at your agency? *(Select all that apply)*

- Operation and Repair of Diagnostic Software and Other Computing Systems
- Maintenance of Alternative Fuel Buses
- Maintenance of Fueling Support Systems
- Advanced technology systems (AV/CV)
- Fare Collection System Maintenance
- Communication Systems
- Operation and Repair of Onboard Recording Devices
- Problem solving skills
- Training focused on the maintenance of an entire vehicle rather than an individual part
- Other (fill in) \_\_\_\_\_
- Don't know

Q35 Which of the following Technical trainings are most needed by Rail Maintainers at your agency? *(Select all that apply)*

- Signal Communications
- Operation and Repair of Diagnostic Software and Computing Systems
- Positive Train Control
- Fare Collection System Maintenance
- Vehicle Location Systems
- Construction Management
- Quality Assurance and Quality Control
- Federal Compliance
- Other (fill in) \_\_\_\_\_
- Don't know

---

Q36 Which of the following Professional Development trainings are most needed by First-Line Supervisors at your agency? *(Select all that apply)*

- Staff Supervision
- Project Management
- Leadership Training
- Problem Solving
- Management of Consultants
- Procurement Training
- Asset Management
- Financial Planning
- Federal Compliance
- Other (fill in) \_\_\_\_\_
- Don't know

---

Q37 Which of the following Workplace Skills trainings are most needed by First-Line Supervisors at your agency? *(Select all that apply)*

- Verbal Communication Skills
- Project Management
- Written Communication Skills
- Workplace Diversity Awareness
- Conflict Resolution
- Computer Skills
- Time Management
- Work Readiness Skills
- Other (fill in) \_\_\_\_\_
- Don't know

End of Block: E1. TRAINING QUESTIONS-OPERATIONS (Q24-37)

---

Start of Block: E2. TRAINING QUESTIONS-ADMINISTRATION (Q38-44)

Q38 Which of the following Professional Development trainings are most needed by Administrative staff at your agency? *(Select all that apply)*

- Staff Supervision
- Project Management
- Leadership Training
- Problem Solving
- Management of Consultants
- Procurement Training
- Asset Management
- Financial Planning
- Federal Compliance
- Other (fill in) \_\_\_\_\_
- Don't know

---

Q39 Which of the following Customer Service trainings are most needed by Administrative staff at your agency? *(Select all that apply)*

- Communicating with the Public
  - Conflict Resolution
  - Diversity & Sensitivity Training
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q40 Which of the following ADA-related trainings are most needed by Administrative staff at your agency? *(Select all that apply)*

- Medicaid training requirements
  - Serving consumers with mental health or cognitive disorders
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q41 Which of the following Workplace Skills trainings are most needed by Administrative staff at your agency? *(Select all that apply)*

- Verbal Communication Skills
  - Written Communication Skills
  - Workplace Diversity Awareness
  - Conflict Resolution
  - Computer Skills
  - Time Management
  - Work Readiness Skills
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q42 Are there other areas of training that are needed by Administrative staff at your agency? *(Please specify)*

---



---



---



---



---



---



---



---

Q43 Which of the following Technical trainings are most needed by Planning and Engineering staff at your agency? *(Select all that apply)*

- Data Collection
- Data Analysis
- Forecasting
- Transportation Planning
- Quality Assurance and Quality Control
- Systems Engineering
- Construction Management

- Compliance
  - Other (fill in) \_\_\_\_\_
  - Don't know
- 

Q44 Which of the following Technical trainings are most needed by Information Technology staff at your agency? (Select all that apply)

- System Integration
- Procurement
- Cybersecurity
- Compliance
- Other (fill in) \_\_\_\_\_
- Don't know

End of Block: E2. TRAINING QUESTIONS-ADMINISTRATION (Q38-44)

---

Start of Block: F. ADDITIONAL COMMENTS (Q45-49)

Q45 Self-driving vehicles pose a potential challenge and opportunity to transit agencies. Is your agency currently planning for the use autonomous transit vehicles? (Select one)

- Yes
  - No
  - Don't know
- 

Q46 Has your agency considered the affect that autonomous transit vehicles may have on employee recruitment and training? (Select one)

- Yes
  - No
  - Don't know
- 

Q47 How are new technologies affecting operations at your agency? What modifications to recruitment and training has your agency made (or needs to make) to address these changes?

---

---

---

---

---

---

Q48 Is there anything else you would like to share regarding the recruitment, training, and/or retention of staff?

---

---

---

---

---

Q49 We would like to share our findings with you. Please provide:

- Your name: \_\_\_\_\_
- Your email address: \_\_\_\_\_

End of Block: F. ADDITIONAL COMMENTS (Q45-49)

## REFERENCES

1. Coelho, P. (1998). *The Alchemist*, trans. Alan R. Clarke. New York: Harper Perennial.
2. John J. Heldrich Center for Workforce Development (2012). *Public Transportation Occupational Guidebook*.
3. U.S. Department of Education, Office of Career, Technical, and Adult Education (2015). Strengthening skills training and career pathways across the transportation industry.
4. U.S. Government Accountability Office (2019). Transit workforce development: Improved strategic planning practices could enhance FTA efforts. Washington. D.C.
5. American Public Transportation Association (2020). About APTA. <https://www.apta.com/about/>.
6. Federal Transit Administration (n.d.). About FTA. <https://www.transit.dot.gov/about-fta>.
7. U.S. Bureau of Labor Statistics (2019). Household data annual averages. 18. Employed persons by detailed industry, sex, race, and Hispanic or Latino ethnicity. <https://www.bls.gov/cps/cpsaat18.htm>.
8. Hughes-Cromwick, M. (2019). *2019 Public Transportation Fact Book*.
9. National Academies of Sciences, Engineering, and Medicine (2013). TCRP Report 162: Building a sustainable workforce in the public transportation industry—A systems approach. Washington, DC: The National Academies Press.
10. Washington, E. (2011). *Practical Resources for Recruiting Minorities for Chief Executive Officers at Public Transportation Agencies*. Washington, DC: Transportation Research Board.
11. Hirsch, B. T., and D. A. Macpherson (2003). Union membership and coverage database from the current population survey: Note. *ILR Review*, 56(2), 349-354.
12. Hirsch, B. T., and D. A. Macpherson (2019). Union membership and coverage database from the CPS. <https://www.unionstats.com/>.
13. Transportation Learning Center (2007). *Working Together: A Systems Approach for Transit Training*. Washington, DC: American Public Transportation Association.
14. Knipling, R. R., and G. Bergoffen (2011). *Driver Selection Tests and Measurement*. Washington, DC.: Transportation Research Board.
15. U.S. Bureau of Labor Statistics (2020). *Occupational Outlook Handbook: Bus Drivers*. <https://www.bls.gov/ooh/transportation-and-material-moving/bus-drivers.htm>.
16. Kulkarni, R. (2017). Uber and ride-sharing: The \$650 billion question. <http://sharespost.com>.

17. Blazina, E. (2016). Uber finds a partner with some public transit systems. *Pittsburgh Post-Gazette*, Sept. 18.
18. Pyzyk, K. Uber adds Boston transit info to app. <http://smarcitiesdive.com>.
19. Center for Transportation Excellence (2020). 2018 transit ballot measures. <http://www.cfte.org/elections>.
20. Transportation for America (2020). Transportation vote 2018. <http://t4america.org/maps-tools/state-policy-funding/2018-votes/>.
21. Babiarz, N., and D. Stumpo (2016). Transit workforce training needs assessment. Southern California Regional Transit Training Consortium.
22. U.S. Bureau of Labor Statistics (2019). Household data annual averages. 18b. Employed persons by detailed industry and age.
23. American Public Transportation Association (2010). APTA preliminary skill development and training needs report. Washington, DC. American Public Transportation Association.
24. Transportation Learning Center (2013). Pathways to equity: Effective transportation career partnerships. Silver Springs, MD: Transportation Learning Center.
25. U.S. Bureau of Labor Statistics (2018). Occupational projections, Occupational Employment Statistics Program.
26. Lewis, C. A. (2000). Perspective on transit industry response to increased gender awareness. Women's Travel Issues Second National Conference, Citeseer.
27. Ivey, S., et al. (2014). Transportation engineering careers: Strategies for attracting students to transportation professions. *Transportation Research Record*, 2414, 245-51.
28. Quatt Associates and B. H. Vogel (2001). Identification of the critical workforce development issues in the transit industry. Washington, DC: Transportation Research Board.
29. National Academies of Sciences, Engineering, and Medicine (2012). NCHRP Report 693: Attracting, recruiting, and retaining skilled staff for transportation system operations and management. Washington, DC: The National Academies Press, 165.
30. Simpson, G. (2003). TCRP Synthesis 46: Diversity training initiatives. Washington, DC: Transportation Research Board.
31. Lowrie, K. W., J. A. Shaw, and M. R. Greenberg (2011). Assessment of surface transportation security training needs and delivery preferences. *Journal of Public Transportation*, 14(4), 6.
32. Leary, M. (2017). FTA Public Transportation Innovative Workforce Initiatives [presentation].

33. Federal Transit Administration (2015). Innovative Public Transportation Workforce Development Program project selections. <https://www.transit.dot.gov/funding/grants/innovative-public-transportation-workforce-development-program-project-selections>.
34. National Transit Institute (2019). About us. <https://www.ntionline.com/about-nti/>.
35. Community Transportation Association of America (2019). About us. <https://ctaa.org/about/>.
36. U.S. Department of Labor, Employment and Training Administration and DTI Associates (2017). Identifying and addressing workforce challenges in America's transportation industry.



U.S. Department of Transportation  
**Federal Transit Administration**

---

U.S. Department of Transportation  
Federal Transit Administration  
East Building  
1200 New Jersey Avenue, SE  
Washington, DC 20590

*<https://www.transit.dot.gov/about/research-innovation>*