The Effects of Automation on the Public Transportation Workforce

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TCRP Project J-11 / Task 34
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• Manager of TTI’s Transit Mobility research program
• Expertise and Interests
  • Transit Performance and Financial Management
  • Process Management and Improvement
  • Bus Planning, Scheduling, Operations, and Maintenance
  • Applying Innovation and Technology to Address Transit Challenges and Improve Customer Service
• Father of 6
Why The Study? TCRP J-11 / Task 34

- It’s coming…
- Workforce impacts not well-documented or understood
  - Type
  - Magnitude
- Be prepared
Research Approach

Use Cases

Planning and Policy Decisions

Job Impacts

Preparation Strategies
Workshop Purpose

Obtain feedback from the transit industry regarding key planning and policy decisions that will have implications on workforce impacts of transit vehicle automation.
Research Products

- Final report
- Strategies to maximize benefits and minimize/mitigate negative impacts
- Fact sheets, presentations, webinars, etc.
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<th>Start</th>
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<tr>
<td>8:30 AM</td>
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<td>Introductions</td>
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<td>8:50 AM</td>
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What are we doing today?
Preparing for Automation

What is transit’s role?
Examples of Past Automation

- Dockworkers
- Warehousing
- Manufacturing
- Banking
- Agriculture
- Retail
- Aviation
Societal and Community Impacts and Benefits (?) – Transit Automation

- Increased safety
- Decreased operating costs
- Improved customer service
- Attract ridership
- Improve sustainability
Automation’s Workforce Impacts Will Vary

- Transit agency type and size
- Public employees vs. private employees
- Positions / jobs
Disparate Impacts Research on Drivers

- Blacks 3x more likely to be security guards, bus drivers, and taxi drivers than Whites
- 28% of bus drivers are Black (12% of U.S. population is Black)
- Lower educational attainment (93% have less than Bachelor’s)
- More difficult to adjust / bounce back for
  - Lower income
  - Lower education
  - Minority
Potential Workforce Positives(?)

• Improved working conditions (lower stress)
• Help address operator shortage
• Others?
Should we be starting to prepare?
Use Cases

5 Transit Vehicle Automation Use Cases
Key Study Assumptions

- Modeling potential impact
- Automation ≠ Electrification
Enabling Technologies

In common: On-board technologies to support automated operations L4 or L5

Differences: some specific technologies / systems might be needed for certain use cases
Cautions and Disclaimers
Bus Automation for Maintenance and Yard Operations

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
  - Demos in past 2 years
  - FTA STAR Plan predicts demos complete by 2021
Low-Speed Automated Shuttles

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
  - Many past and current demos and pilots
  - Continued near-term implementation expected
Automated Bus Rapid Transit

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
  - Pilots across the pond
  - FTA STAR Plan demos BRT in 2021-2022
Automated Mobility on Demand

- Two sub-cases:
  - Private operator
  - Public operator / purchaser of service
- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
  - Private operator: “soon” (but not so much)
  - Public operator / purchaser of service: uncertain
Automated Local Bus Service

- Description / examples
- Operational impacts
- Supporting technology
- Potential timeline
  - Automated Bus Consortium
  - Uncertain timeline
Breakout Sessions
Instructions

• Group
• Identify
  • Facilitator
  • Scribe
• Discuss planning and policy questions
• Record summary of answers on notes pages
• Report-out and discussion
Report-out and Discussion

What do you think?
Questions
Next Steps and Staying Involved

• Front-line employee survey
tinyurl.com/TransitAutomation
by Oct. 11, 2019

• Webinars (TBD)

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Questions

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