In Progress Study: The Effects of Automation on the Public Transportation Workforce
Introduction
Agenda

• Research need
• Methodology and products
• Initial feedback from the transit industry
• Next steps
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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?

• It’s coming…
• Be prepared
• Transit workforce impacts not well-documented or understood
  • Type
  • Magnitude
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
Potential Negative Impacts

• Needing additional training to succeed
• Job loss
• Undesired change in job responsibilities / duties
• Reduction in pay (guarantee or premium [e.g., overtime])
• Loss of desirable working assignments
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 Benefits

• Chance to learn new skills
• Reduced job stress
• Reduced job physical demands
• Increases in pay
• Improvements in working conditions
• More desirable working assignments
Research Approach

- Use Cases
- Planning and Policy Decisions
- Job Impacts
- Preparation Strategies
Examples of Past Automation

- Dockworkers
- Warehousing
- Manufacturing
- Banking
- Agriculture
- Retail
- Aviation
Transit Vehicle Automation Use Cases

5 Transit Vehicle Automation Use Cases
Bus automation for maintenance and yard operations

Low-speed automated shuttles

Automated bus rapid transit

Automated mobility on demand
- Operated by a private firm (e.g., Waymo)
- Operated by a transit agency

Automated local bus service
Key Study Assumptions

• Modeling potential impact
  • Assume jobs are not protected
  • Look for job increases, losses, and duty changes
• Automation ≠ Electrification
Front-Line Employee Survey

- Targets front-line and other directly-impacted jobs
- Perceived *benefits* and *concerns* for each use case
- ~115 responses (so far)
Benefits Anecdotes

• May reduce the stress of having drive in local traffic. Allow the Operator to spend more time with passengers.

• It would allow the development of a new position making the Operator of the vehicle more customer service than just being a driver.

• Reduce stress from confrontational passengers about service levels and timeliness.

• None. Its like asking a work horse what benefits it could see if the farmer is thinking of buying a tractor.
Concerns Anecdotes

• This would be the beginning to an ending. Kill the human race as we know it.
• Job loss.
• Reduction in system familiarization and customer contact, resulting in inadequate customer care/assistance elsewhere.
• Overall sense of foreboding that our jobs are being outsourced to computers and that we are not recognized or appreciated for the wealth of skills and customer care we bring to the occupation.
Concerns Anecdotes

Bus Operators do so much more than just navigate traffic, we monitor the streets for potential hazards, identify potential passengers, discern the difference between those hanging around a bus stop and those actually waiting for the bus, accommodate those with special needs, make 'courtesy stops' for elderly or those with children or other special situations, make split-second decisions in the interest of passengers and system integrity such as opening the bus doors even if not fully in designated stop zone yet, negotiate snow banks and other weather-related issues at each and every bus stop in the winter to ensure safety and efficiency, help facilitate connections to other routes by honking or flagging down another bus…. This is in addition to the customer service/interaction.
Industry Workshop Themes

• Agreement on need for increased technical skills for mechanics and technicians

• Uncertainty regarding operator role
  • Many felt keeping a full-time “behind the wheel” person was necessary (safety driver)
  • At least have full-time customer ambassador (capable of driving)

• Tendency to use automation for new services or routes

• Tendency to re-invest possible cost savings into more service
Next Steps and Staying Involved

• Front-line employee survey
  tinyurl.com/TransitAutomation
  by December 13, 2019
• Webinars (TBD—Feb. 2020)

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