

What are the Workforce Impacts of New Transportation Technology?

- Moderator:
 - **J. Bryan Nicol**, Managing Director, Infrastructure and Capital Projects, Deloitte
- Speakers:
 - **Finch Fulton**, Deputy Assistant Secretary for Policy, U.S. Department of Transportation
 - **Stephen Brich**, Commissioner, Virginia Department of Transportation
 - **Jessica Nigro**, General Manager and Head of Technology and Innovation Policy, Daimler



What are the Workforce Impacts of New Transportation Technology?

Automated Vehicles 3.0

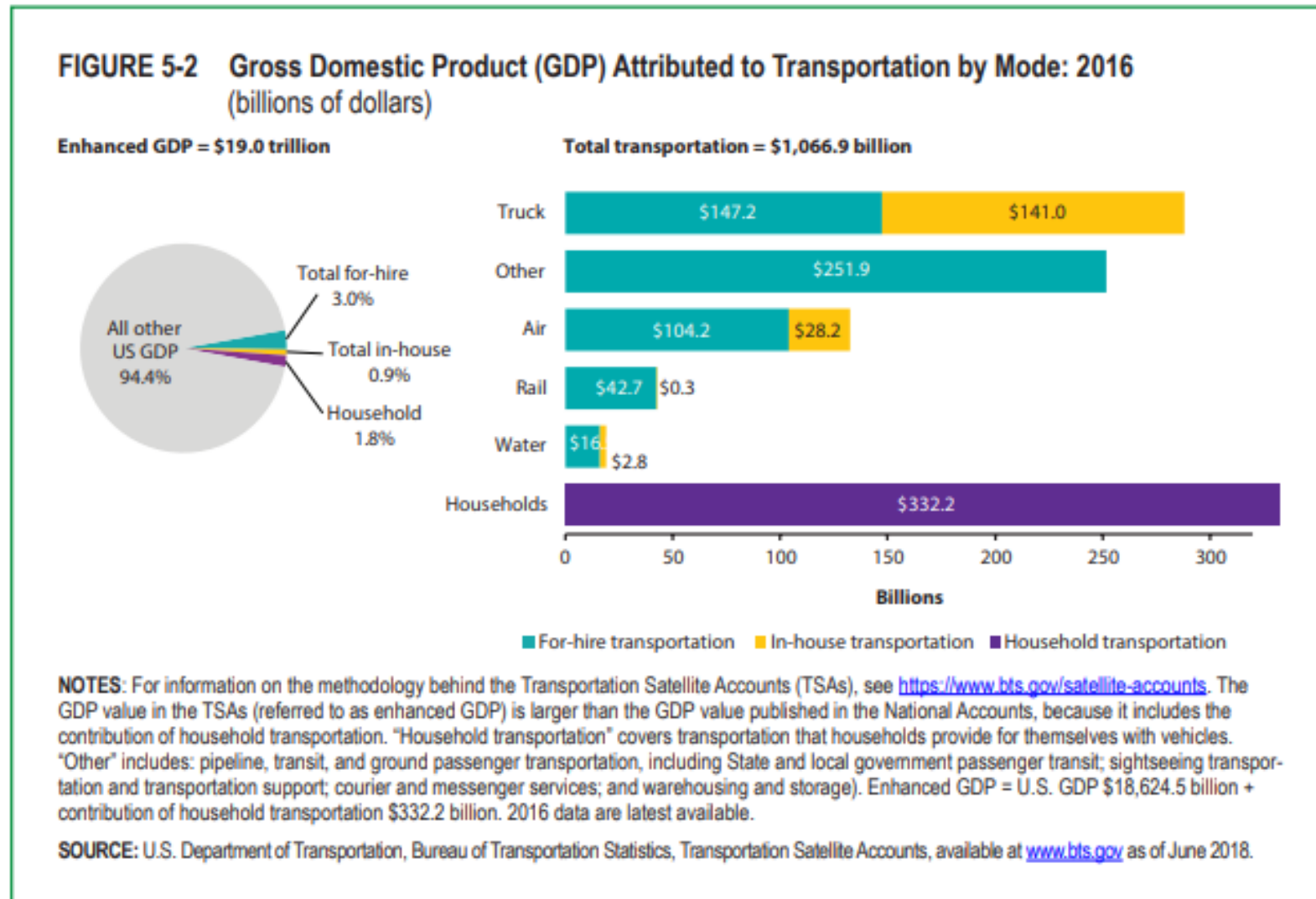
PREPARING FOR THE FUTURE OF TRANSPORTATION



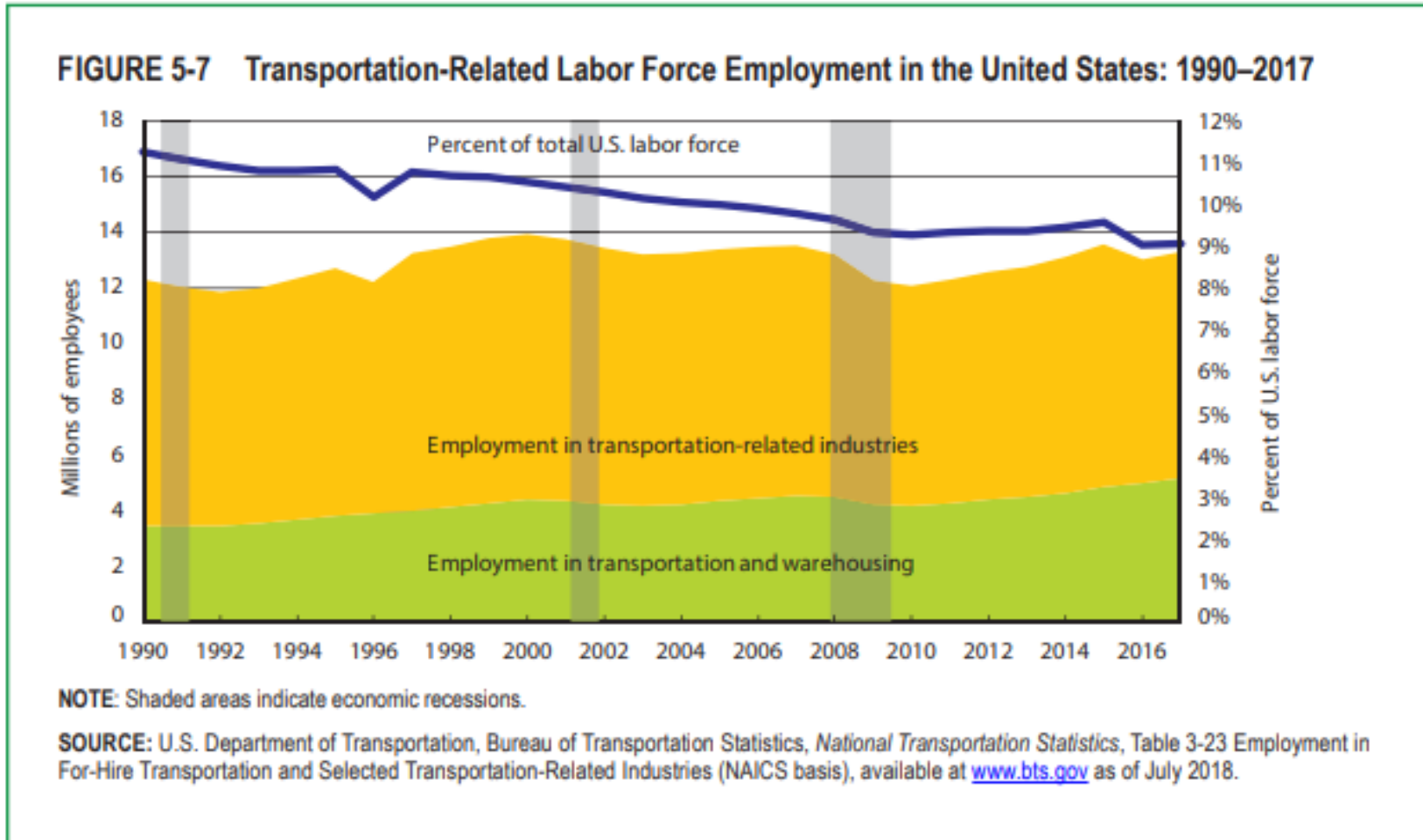
U.S. Department of Transportation

www.transportation.gov/av

Transportation accounted for 8.9% of U.S. GDP in 2016



Transportation and transportation-related industries employ over 13.3 million people, accounting for 9.1 percent of workers in the United States



Workforce and Labor

1. U.S. DOT recognizes emerging concerns and uncertainty around potential impacts of ADS on the existing workforce.
2. U.S. DOT is working with other cabinet agencies on a comprehensive analysis of the employment and workforce impacts of automated vehicles.
3. ADS developers and deployers may want to consider how to assess potential workforce effects, future needs for new skills and capabilities, and how the workforce will transition into new roles over time.

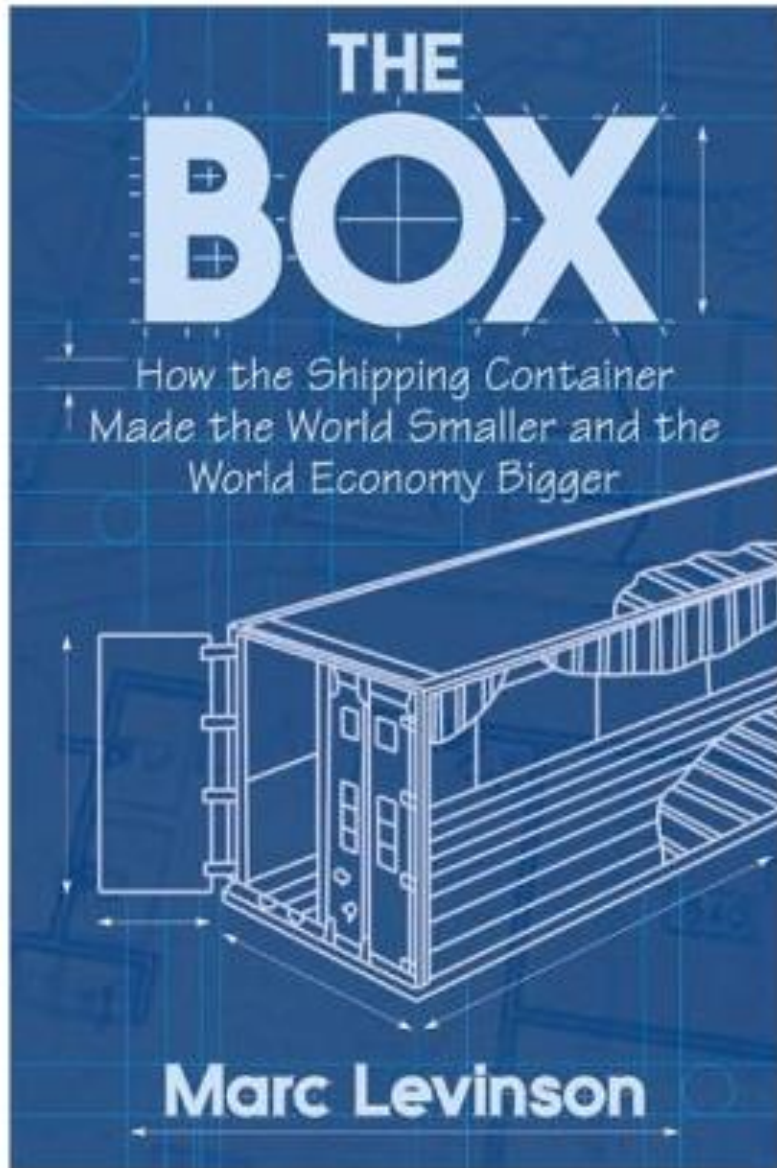
DOT / DOL Workforce Impacts Study

- The workforce study focuses on four general areas:
 1. Labor Force Transformation/Displacement
 2. Labor Force Training Needs
 3. Technology Operational Safety Issues
 4. Quality of Life Effects Due to Automation
- The first phase of the workforce study focuses on the long-haul trucking and transit bus sectors. The second phase will be expanded to include a broader set of driving occupations and potentially impacts to ancillary job categories.
- DOT held an event on March 20, 2019, to receive stakeholder input into the development of the upcoming study on Automation and the Workforce and an accompanying Report to Congress, expected summer 2019. The workforce event will convene key stakeholders representing industry (vehicle, ADS technology, and trucking), labor, the public sector, academia, and research to provide input into the automation adoption scenarios that will underpin the analysis.

Learning from the History of Automation in the Aviation Workforce

1. The aviation industry developed technological solutions to help airline pilots manage factors such as high workload, distractions, and abnormal situations.
2. Automation has undeniably made flying safer by supporting pilots. The characteristics that have improved trust in and effectiveness of these systems include:
 - a) Reliable, robust systems that minimize false or missed alarms/reports
 - b) Pilot interfaces that are easy to understand and enhance awareness.
 - c) Training to understand how the systems work (and how to operate them).
 - d) Avoidance of skill degradation by encouraging pilots to practice manual flight and basic skills.





- Vehicle automation is likely to make the movement of people and goods safer, cheaper, and more convenient.
- It remains extremely difficult to predict the exact nature and extent of impacts on the professional driving workforce.
- The specific ways in which these jobs will change may vary significantly across market segments and operating environments and will be influenced by contemporaneous changes in related industries.

Preparing for

THE FUTURE OF TRANSPORTATION

Automated Vehicles 3.0

October 2018

<https://www.transportation.gov/av>



U.S. Department of Transportation

VDOT OF TOMORROW

Building the agency for the future

 VDOT Commissioner Stephen Brich, P.E.

June 2019

Virginia: A Leading state + DOT

- ▶▶ Virginia is 7th in the nation for the number of Fortune 1000 companies
- ▶▶ Virginia is ranked 7th by U.S. News & World Report for Best States
- ▶▶ Home to more than 60 colleges and universities
- ▶▶ 8.5 million citizens
- ▶▶ Virginia is the 3rd largest state DOT

Key People Trends at VDOT

49

AVERAGE
AGE OF
EMPLOYEES

15

AVERAGE
YEARS OF
SERVICE

17%

ARE
MORE THAN
60 YEARS
OLD

34%

HAVE
COLLEGE
DEGREE

71%

EMPLOYEES
HAVE
NETWORK
ACCESS

50%

DISTRICT
EMPLOYEES
HAVE
NETWORK
ACCESS

RETIREMENT

Retirement
eligibly
is high

VACANCY

Vacancies have seen
a slight uptick from
normal, specifically
in positions
in rural areas

RETENTION

Technical job retention
is lower than other
positions
in VDOT

TELEWORKING

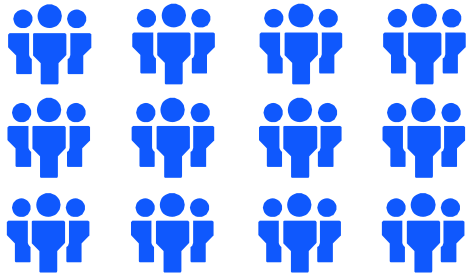
Teleworking is only
used by
22% of those that are
eligible

VDOT's Vision of the Future

A future transportation system delivers mobility safer, faster and more efficient.

- Frictionless, automated, personalized travel in **Urban Areas**
- Connected, resilient **Rural Areas** across the Commonwealth of Virginia
- Interconnected highways, bridges, tunnels, waterways and transit hubs through **Smart Infrastructure**
- Innovation through connected, electric, and **Autonomous Vehicles** and shifting attitudes toward mobility
- **New Funding Streams** through dynamic user charging and new monetization strategies

Information-seeking Stage



12

Focus groups conducted across VDOT's districts and directorates with 80+ participants



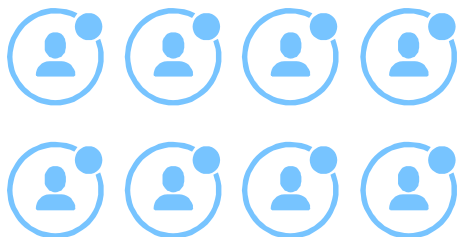
8

Interviews conducted to gather leadership perspective



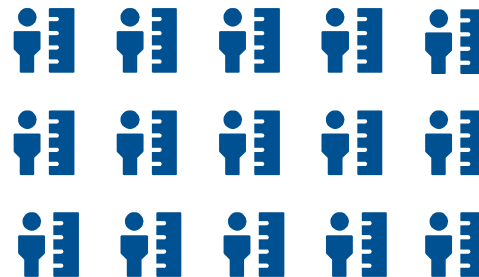
27

Technical and human skills identified as critical to VDOT's future



8

Non-traditional competitors analyzed to gather insights on how they are recruiting the key talent that VDOT needs



15

Key HR data metrics reviewed



24

Diverse voices from across VDOT came together to prioritize the work and workforce initiatives that VDOT – and this project – should focus on first

How We Get There

1

PREPARE OUR PEOPLE



- Development
- Strategic hiring
- Training
- Mentoring

2

EMPOWER INNOVATION



- Challenge the norm
- Create
- Adapt
- Think differently

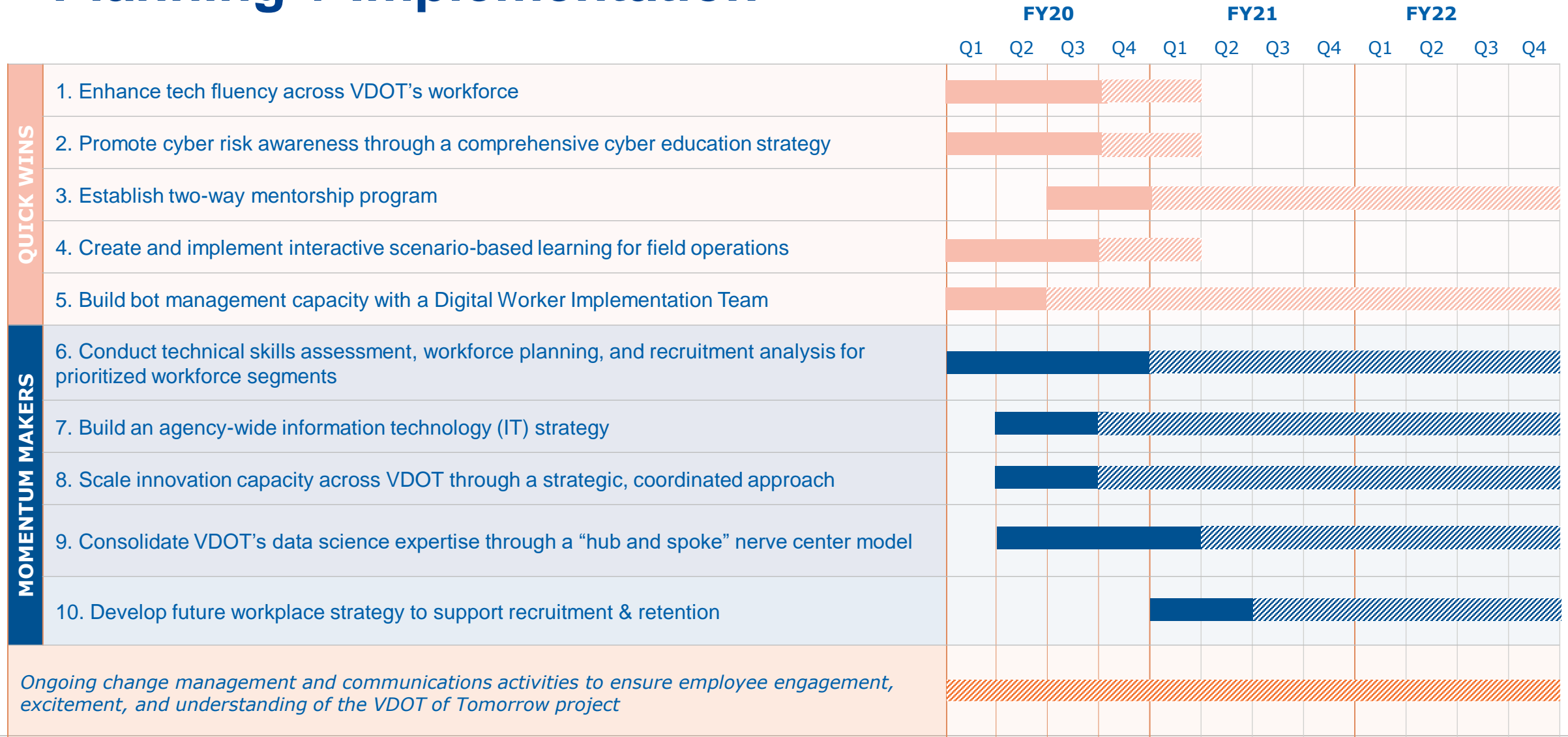
3

MODERNIZE OUR METHODS



- Improve processes
- Create efficiencies
- Modernize procedures
- Update strategies

Planning + Implementation



PTIO

PTIO

Partnership for
Transportation Innovation
& Opportunity

DRIVING THE WORKFORCE OF THE **FUTURE.**

Presentation by Jessica Nigro

Founding Member + Secretary, PTIO

General Manager + Head of Technology and Innovation Policy, Daimler



Innovation Drives Opportunity

The Partnership for Transportation Innovation and Opportunity includes leading companies and associations committed to advancing autonomous vehicle technology in ways that improve quality of life and economic opportunity for all Americans.



DAIMLER



TOYOTA

UBER



EXAMINING THE IMPACT OF AVS



- **Benefits for Society:**
 - Safer roadways
 - Greater access to mobility
 - Reduced gridlock
 - Improved environment
 - Increased productivity

IDENTIFYING WORKFORCE IMPACT

- Opportunities for Workers:
 - Greater efficiency
 - Economic gains
 - Enhanced career opportunities



UNDERSTANDING TRANSITION TIMELINE



- **Near Term:** Recent Research from SAFE projects measurable impacts begin to occur in 2030s, with most occurring in 2040s
 - Partial automation of trucks may actually increase employment
- **Long Term:** SAFE projects that more advanced levels of automation will create opportunities in the AV industry and supply chain, as well as other transportation careers
 - Questions to consider:
 - *What skills will be needed?*
 - *Where will new jobs be located?*

ENGAGING FEDERAL POLICYMAKERS

- Conducting Outreach, Providing Information + Seeking Collaboration
 - 80+ House and Senate Meetings
 - DOT Ongoing Analysis on AVs + Workforce
 - Presentations + Briefings, including:
 - Congressional Black Caucus Annual Legislative Forum
 - Senate Auto Caucus
 - Third Way Transportation Panel



ENGAGING STATE/LOCAL STAKEHOLDERS

- Soliciting State/Local Perspective is a Top Priority
 - Nationwide Community Listening Sessions
 - D.C. – 30+ organizations, presentation by Indiana Sec. of Career Development and Connection Blair Milo
 - Indiana – 40+ participants from Indiana State government, academia, workforce development + local business communities
 - Missouri – 60+ participants from St. Louis government, academia, workforce development + local business communities
 - Upcoming: Ohio + Michigan
- Engaging Directly with Government Officials, Stakeholders Is Equally Important
 - Rhode Island DOT
 - California DOT
 - New York State Legislature
 - DriveOhio (a project of Ohio DOT)
 - Michigan Mobility Institute/Detroit Mobility Lab

PREPARING FOR OUR AV FUTURE



- **PTIO Identifies Outstanding Questions In Its Research Priorities:**
 - **How will AV technology impact the workforce?**
What new workforce opportunities may arise when AVs are deployed, and how may impacts vary by region?
 - **What workforce training is needed to ensure a smooth transition to AVs and how should it be delivered?**
Which training programs will be most effective and what deters people from taking advantage of training programs that are already available to them today?
 - **How will AV technology improve quality of life?**
How will AV technology improve working conditions in existing occupations and benefit people whose career opportunities are limited by lack of transportation?

To connect with PTIO and its members, email us at PTIO@OurAVFuture.org.

To learn more about PTIO, visit our website www.OurAVFuture.org and follow us on social media:

 [**twitter.com/OurAVFuture**](https://twitter.com/OurAVFuture)

 [**linkedin.com/company/our-av-future/**](https://linkedin.com/company/our-av-future/)