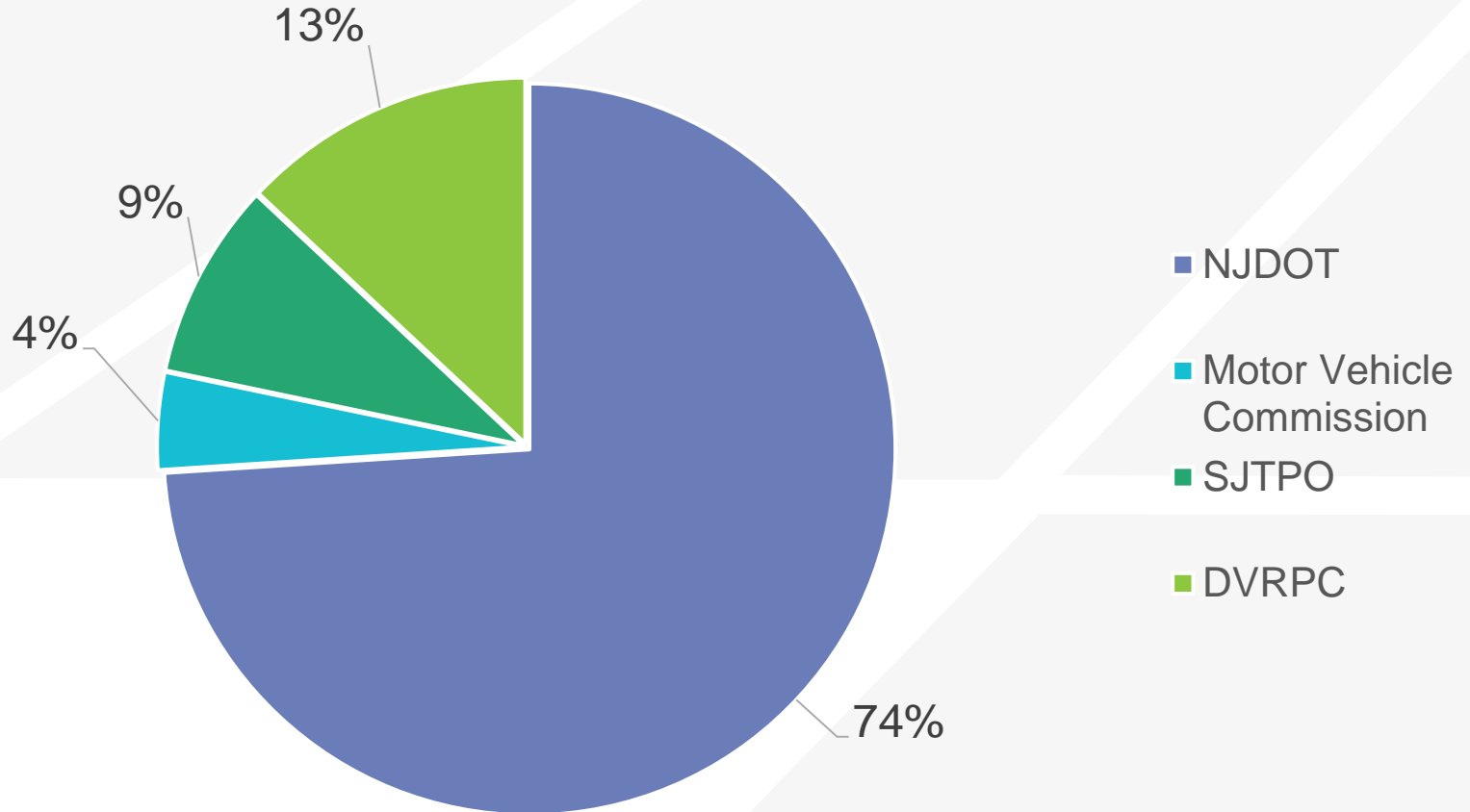


Appendix 3
NJDOT Research Needs and
Technology Transfer Survey
Results

Which organization do you work for?



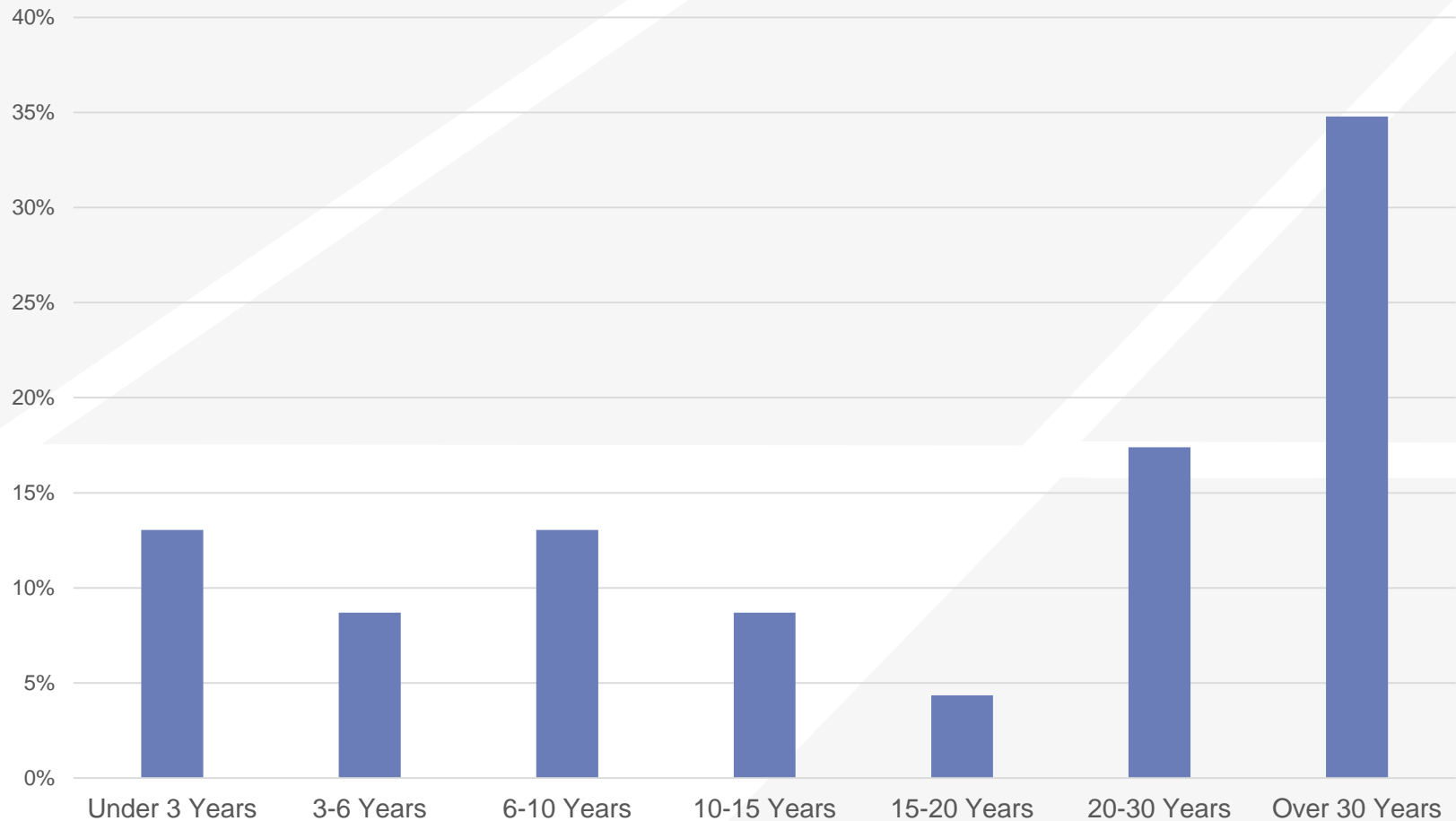
Represented NJDOT Divisions

- Aeronautics
- Capital Planning
- Construction & Materials
- Civil Rights
- Environmental Resources
- Executive
- Highway & Traffic Design
- Information Technology
- Local Aid
- Multimodal
- Operations
- Permits
- Planning
- Procurement
- Safety & Outreach

Represented Job Titles

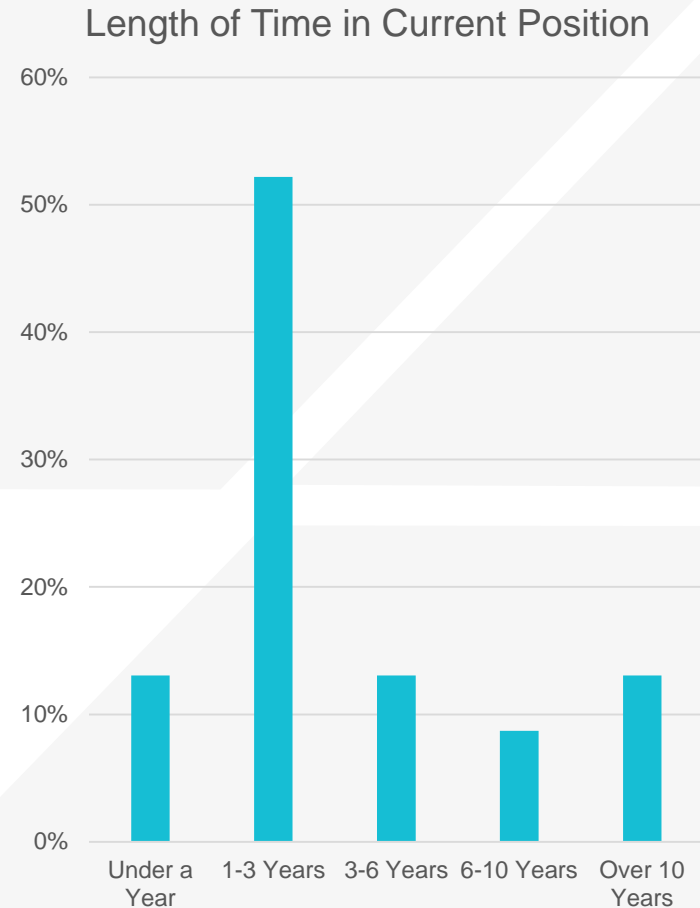
- Directors
- Managers
- Assistant Directors
- Assistant Commissioners
- Planners
- Engineers

Length of Employment at Organization

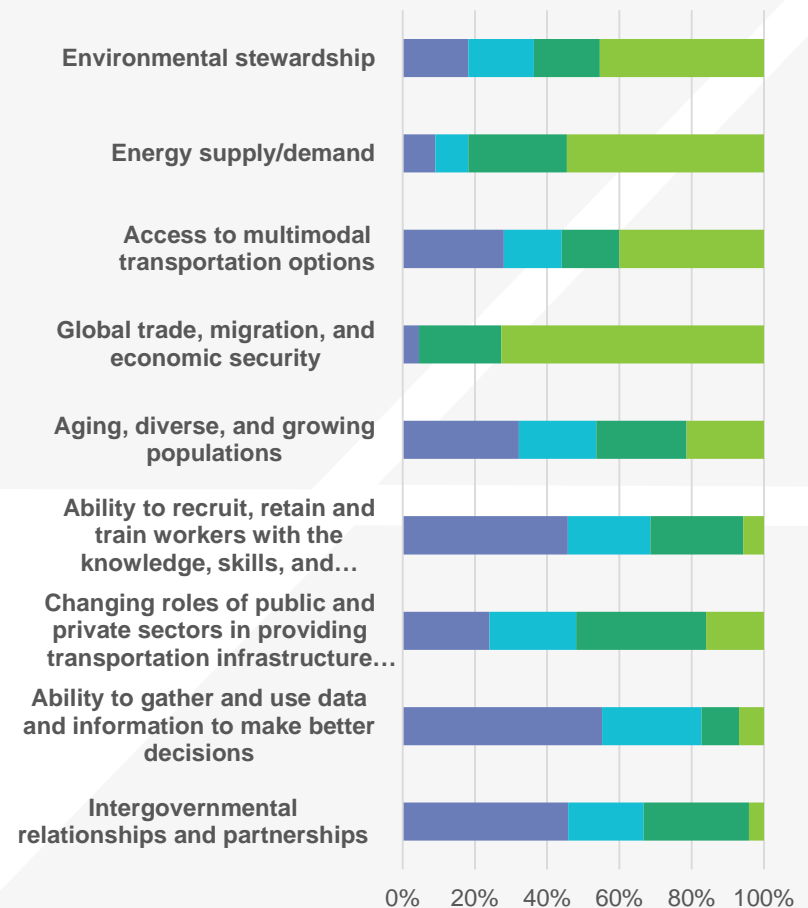
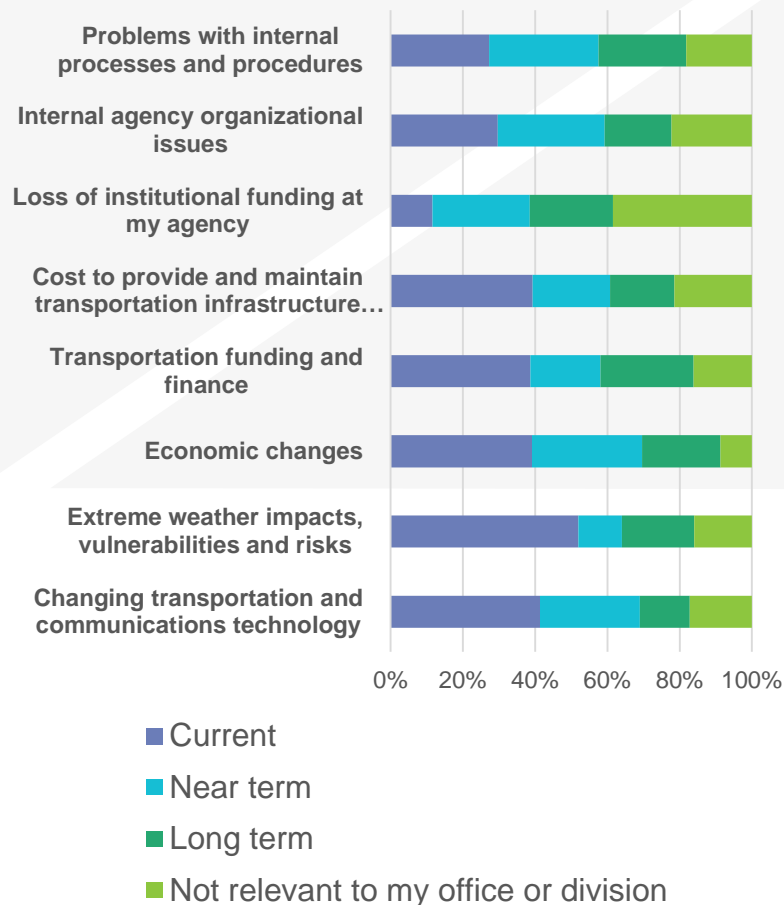


Survey Respondents

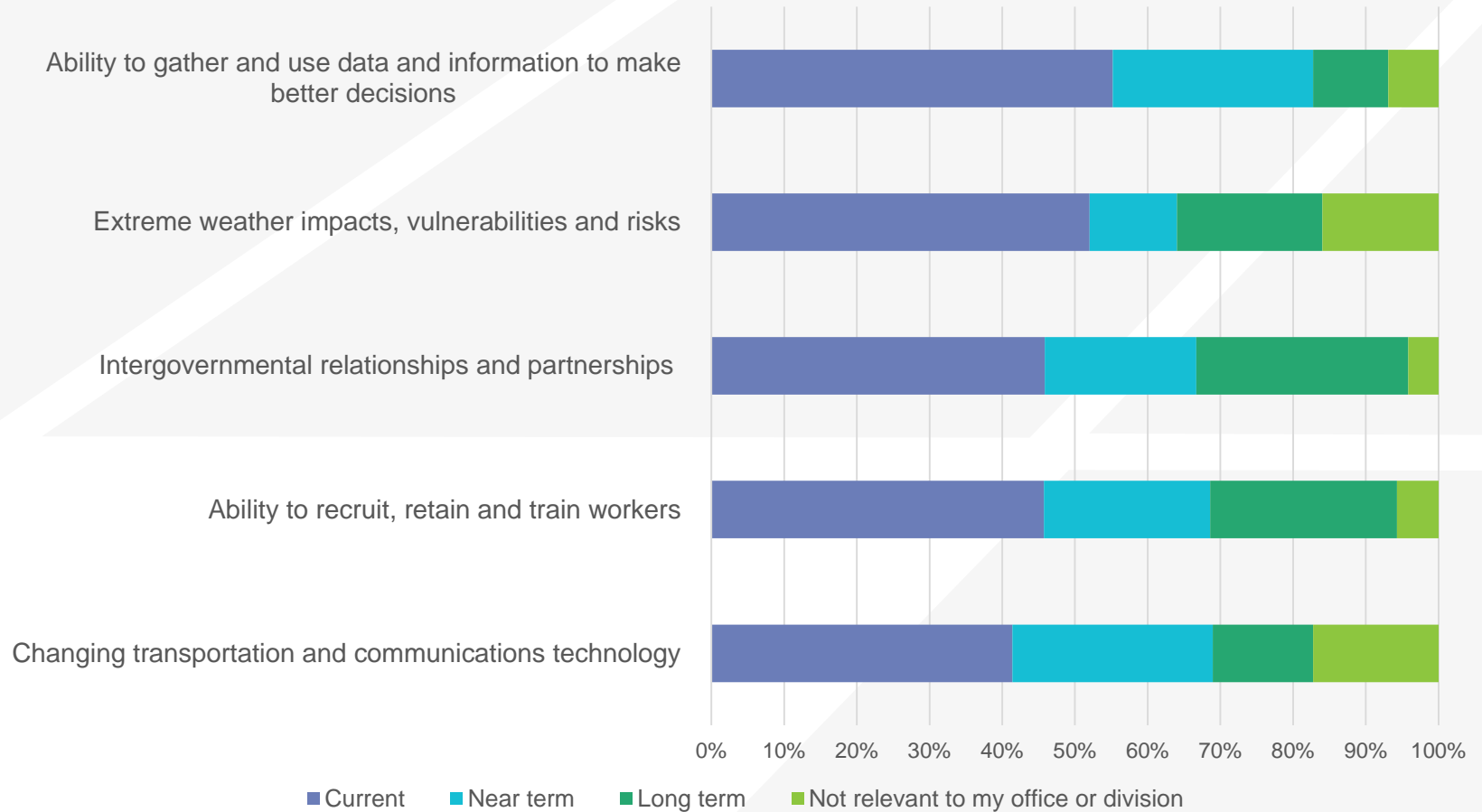
- Primarily from NJDOT
- Many divisions represented through the survey.
- A mix of managerial and executive positions.
- Respondents have been at their organizations for a long time.
 - » Even if only a short time in their current position.
- Likely possess a strong understanding of organizational needs and challenges.



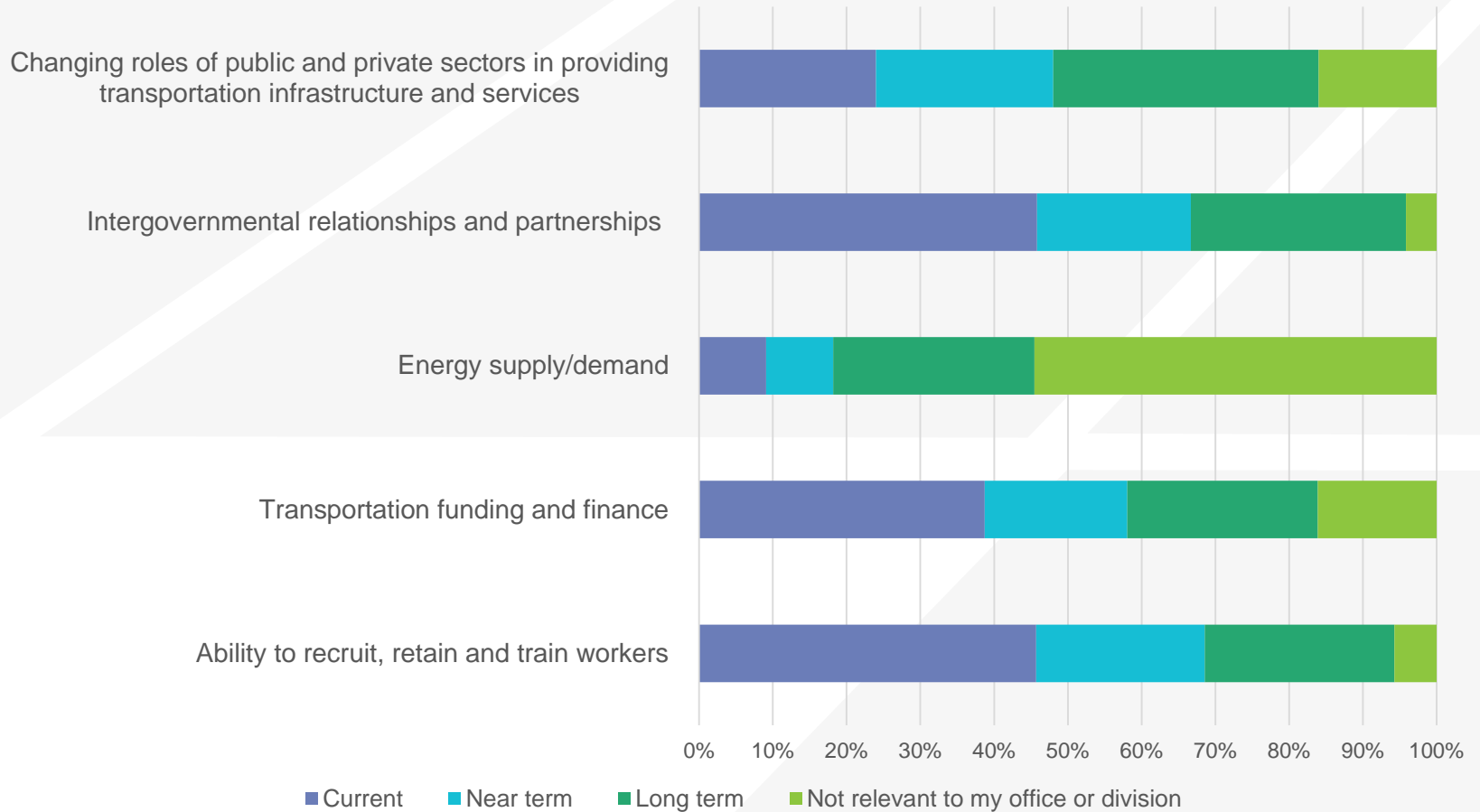
Transportation issues, needs, challenges facing your office



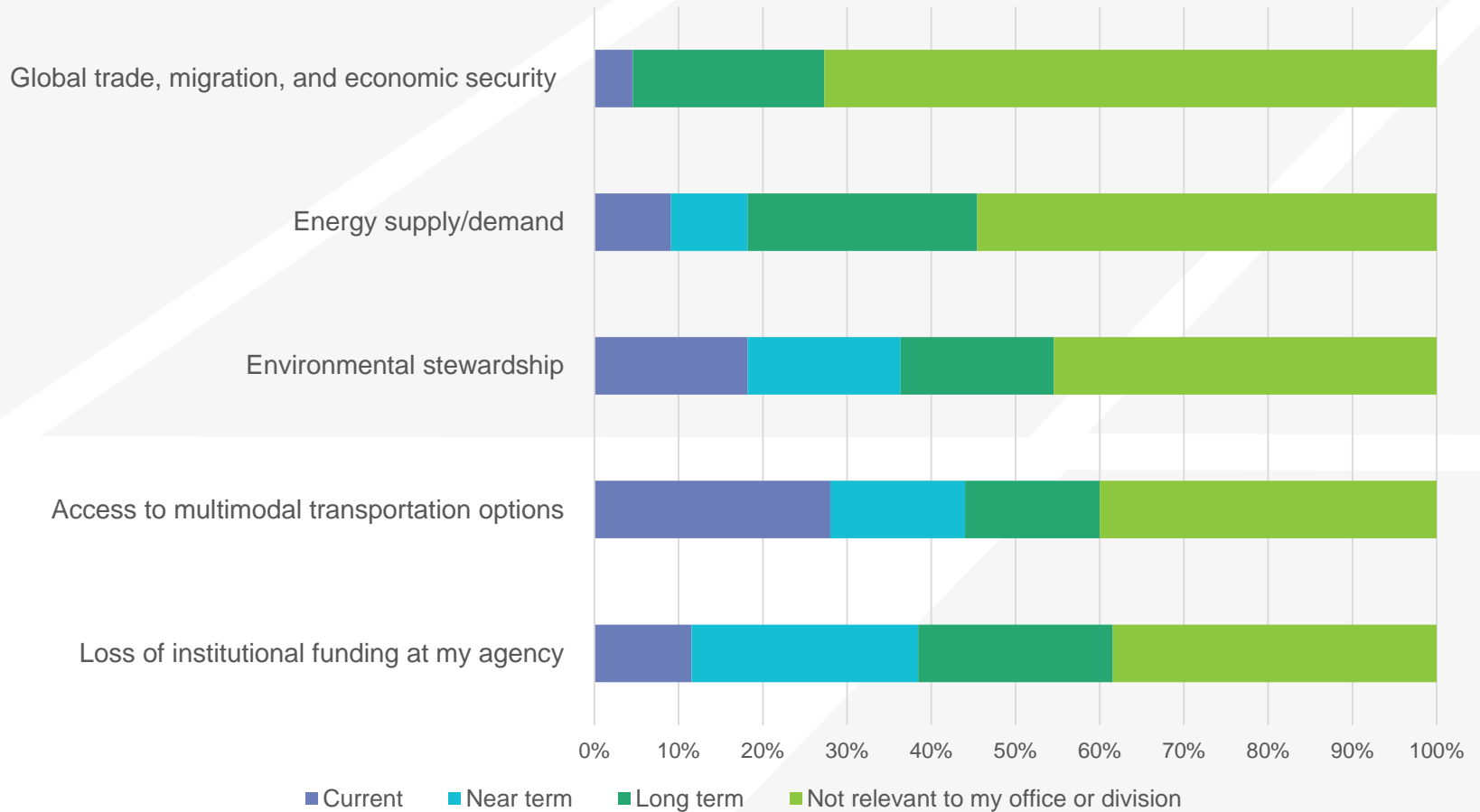
Immediate Challenges



Long-Term Challenges



Challenges Not Relevant



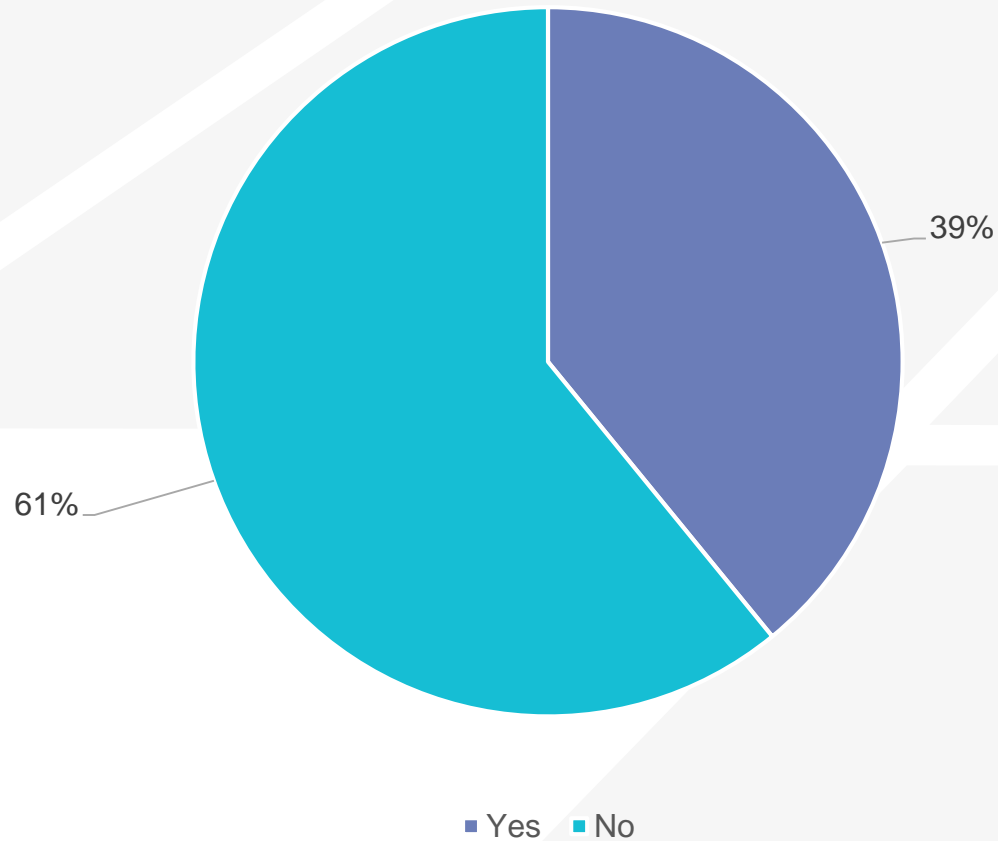
Related Findings

- Immediate challenges include knowledge retention data-based decision making, extreme weather risk, and a changing technology landscape.
- Ability to recruit, retain, and train workers is considered one of the most significant issues, both currently and long-term.
- “Broader” themes of environmental stewardship and global trade not seen as relevant.

Related Findings & Issues

- “Brain drain” driven by:
 - » Steady stream of retirements
 - » Lack of hiring in previous decades
 - » Limited attraction from young graduates
 - » Civil service regulations preventing flexible use of staff.
- Funding:
 - » Transportation infrastructure, particularly pavement
 - » Public transportation

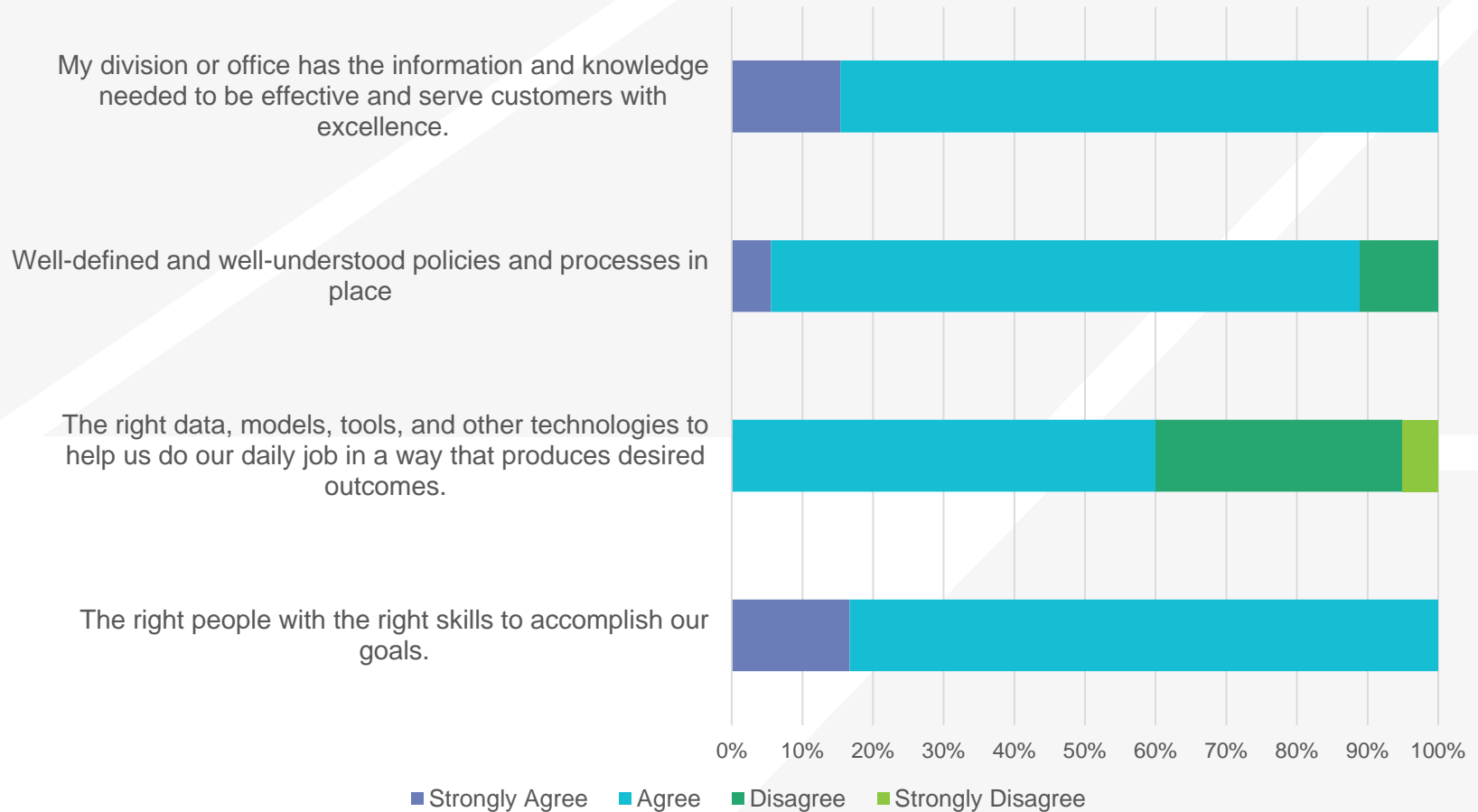
Awareness of relevant peer agency activities



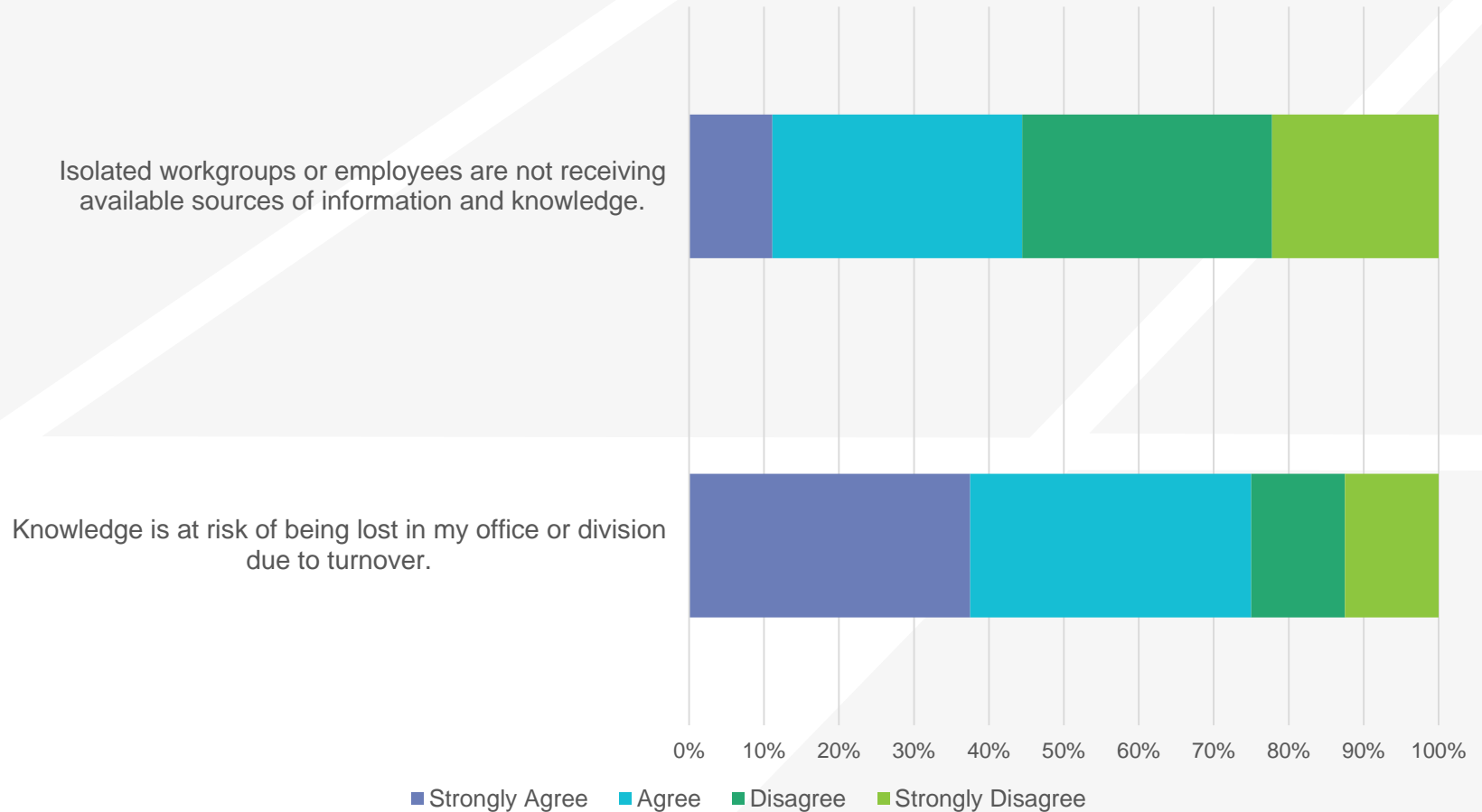
Peer agency activities

- Connected and autonomous vehicles – *several states including Pennsylvania*
 - » Most common response
- LiDAR for field data collection – *several states*
- Unmanned aircraft systems
- PennDOT Connects
- Open Forums
- ArcGIS open data sharing platform
- Probe Data Analytics Suite – *University of Maryland*

Agree-Disagree Statements



Agree-Disagree Statements



Related Findings

- General agreement of the right individuals, knowledge, information, and policies in place within offices and divisions
- Less agreement over having the right data, models, tools, and technologies.

Additional Responses

- Outdated procurement system, with the governing authority rolling out the new system failing to address NJDOT needs
- Better access to latest hardware and software and means of vetting what would work best
 - » Need for hands-on training
- Need for a 'project management' office

Additional Responses

- Need for continued dialogue with planning partners throughout the state
 - » Related to performance measures, air quality conformity, data-driven safety analysis.
- Need for additional staff

What additional information is needed? (Office/Division Level)

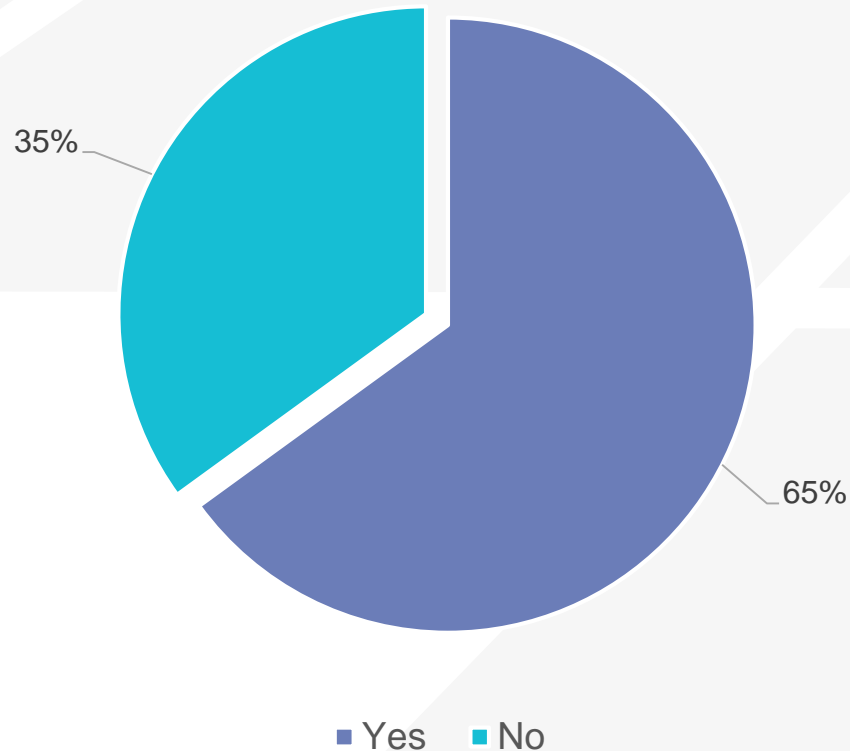
- Succession planning
- Information about businesses that generate freight traffic
- High staff turnover in subregional counties and municipalities as well.
 - » Additional efforts needed to preserve institutional knowledge.
 - SJTPO region-wide traffic signal inventory

What additional information is needed? (Individual Level)

- Continued exposure to newest technologies and trends
 - » GIS, CAV, AI, Machine Learning, Drones, Web Evaluation/Forecasting Tools, Mobile
- Increased communication between DOT, MPOs, and subregional stakeholders
- Pier exchange between other states and some large corporations
- Technical and regulatory environmental knowledge

FAST Act

Does the passage of the FAST Act or other legislation impact how you do business?



Areas of research to respond to new legislation/regulations

- UAS technology
- Freight-related technology advances
- Environmentally friendly alternatives to highway salt
- Extreme weather impacts, performance measure targets, mitigation, & adaptation
 - » Result of FAST Act's stormwater resiliency factor emphasis
- Also a number of 'Not Sure' responses

Additional Research/Technology Topics & Transfer Activities

- Better leveraging of NJDOT Data Warehouse
- Potential benefits of blockchain
- Electrically conductive pavement
- Effects of centerline rumble strips on roadway condition
- Comparison of emission rates between natural gas and diesel vehicles of same model year
- Bike/ped near-miss crash data analysis