



HELP WANTED

People, Organizations, Jobs, and Businesses for Tomorrow's Transportation

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The transportation sector of the U.S. economy employs millions of people—not only in the movement of goods and people, but also in the design, construction, operation, and maintenance of a vast system of transportation infrastructure. This infrastructure, which includes roads, airports, waterways, ports, harbors, rail facilities, and pipelines—with an estimated overall value of more than \$5 trillion in 2014, or more than \$16,000 per person (1)—has an outsized influence on well-being and quality of life by providing essential access and mobility for work and businesses, health care, education, recreation, and public safety services. The system itself is developed, operated, and managed by private and public enterprises and, as of 2012, employs approximately 4.3 million people. This number is even larger when it accounts for people whose jobs are entirely dependent on the transportation system, from delivering fresh lettuce year-round to a fast response to a fire alarm to the reliable delivery of children to school in the morning.

Increasingly, managers and administrators throughout the transportation system feel concerned that not enough people are available to fill these jobs. A growing number of older workers are approaching retirement; at the same time, rapid growth in other areas of the economy offer high wages and attractive working conditions to new entrants to the labor force. For example, a 2018 survey of 2,700 contractors and construction managers found that 91% of respondents reported having a difficult or moderately difficult time finding skilled workers (2). Conversations with the leaders of many government transportation agencies yield a similar assessment.

Finding ways to attract, develop, and retain employees and contractors to ensure that transportation agencies and the sector as a whole will have the workforce needed for the future presents major challenges. Through research and support for public policy development, the Transportation Research Board (TRB) works to define and address these challenges.

The American Association of State Highway and Transportation Officials,

modal administrations of the U.S. Department of Transportation, and other partner organizations of TRB are actively engaged as well. Articles in this issue of *TR News* describe how practitioners and educators are assessing changing demographics and technology to estimate transportation workforce needs and to develop practical strategies and tactics for meeting those needs.

Refreshing the View

Candace Blair Cronin and Lawrence Goldstein make the case that transportation agencies need to adopt a cross-modal view of their workforces and a strategic approach to developing those workforces. Many of the skills and competencies needed to manage the future transportation system are not restricted to highways, rail, or airports; old stereotypes of who can do the jobs must be discarded for agencies to attract talented, capable people. Charlene McArthur suggests that, to succeed, transportation organizations must reach out to younger students and focus on workplace culture.

Among the more pernicious stereotypes to be confronted is the human tendency to associate only with people like oneself. A wide range of research shows just how valuable it can be to have a diverse set of perspectives and appropriate skills within any group that has a mission to accomplish or problem to solve. Stephanie Ivey, Meredith Powers, and Adriana Clark describe the business case for increasing the diversity of the transportation workforce.

Another stereotype is the inclination to think of workforces simply as sources of labor. An organization's workforce—its employees and contractors—comprise a reservoir of experience, judgement, and knowledge. This reservoir is a valuable asset, a form of capital that can be lost or allocated poorly to mission-critical activities. Frances Harrison and Hyun-A Park describe some of the efforts to combine and apply knowledge management and human resources development to ensure that transportation agencies have the essential capabilities to pursue their mis-

sions. Nancy Daubenberger and Kathryn Zimmerman each provide examples of specific applications of these practical management tools.

Harnessing Technology

Developments in technology are high on the list of change agents in transportation workforces. It remains to be seen how quickly and extensively driverless vehicles, for example, or the replacement of fossil fuels as primary sources of energy—as well as the introduction of sensors, integrated circuits, and other microelectronics into many aspects of transportation system operations—have progressively changed the job descriptions and educational backgrounds of large groups within transportation workforces.

Todd Szymkowski and Ivey describe how one of these groups—professionals dealing with transportation system management and operations—is coming to grips with the demands for capable workers by defining what it means to be capable and qualified in this new area of practice. Teresa Adams, Maria Hart, and Kerri Phillips offer an example of another group—highway maintenance workers—that plays a crucial but widely underappreciated role in transportation system operations and presents similar issues of worker recruitment, development, and retention.

To some extent, dealing with the issues of transportation workforces may require changes in the ways government transportation agencies do business. Practices that worked well when the primary business areas were system expansion and new construction may be less well suited to the demands of technology upgrading, maintenance, preservation, and redeployment of previous investments.

Newer generations of workers may find satisfaction in lifestyle choices representing values and priorities that differ from those of their predecessors. Operating in the public sector and, often, lacking the personnel-management resources and freedom that private companies enjoy, these agencies may be hard-pressed to compete for talent, both in younger workers and in experienced staff.



Photo: Washington DOT

New processes and technologies in the transportation industry demand a workforce with a broad range of skills and capabilities.



Photo: Virginia DOT

Virginia DOT employees gather for Go Orange day. Increasing diversity and engaging employees in the organizational mission is crucial to keeping transportation at the forefront of innovation.

We hope this issue of *TR News* will illustrate both why the changes are important to everyone's prosperity and wellbeing and how research and development of new tools for workforce management—human resources, organizational knowledge, and administrative practices—helps transportation agencies accomplish their future missions.

REFERENCES

1. U.S. Department of Transportation. Chapter 8: Value of Transportation Infrastructure. In *Transportation Economic Trends 2016* (W. H. Moore, ed.), Washington, D.C., 2016, pp. 91–94.
2. Soergel, A. Where Are All the Builders? *U.S. News & World Report*. June 15, 2018. www.usnews.com/news/the-report/articles/2018-06-15/the-us-construction-industry-is-booming-but-where-are-the-builders.

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- › Able to maintain long-term perspectives while dealing effectively with emergencies and peak-load demands;
- › Conversant with emerging, current, and obsolete technologies;
- › Entrepreneurial, flexible, and patient with bureaucratic and political management processes; and
- › Tolerant of recurring political pressure to do more with less.

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