

# Technical Career Paths



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# How can Missouri pilot a new framework by July 1, 2019 which would expand technical career paths to improve retention and professional development?

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## Capstone Members:

**Joey Plaggenberg**, Missouri Department of Revenue

**Angelette Prichett**, Missouri Department of Higher Education

**Angela Riner-Mooney**, Missouri Department of Elementary and Secondary Education

**Stacey Smith**, Missouri Department of Transportation

**Myles Strid**, Missouri Department of Corrections

# Missouri needs to retain highly skilled engineering professionals

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The Team chose Engineers because:

- **Demand:** STEM professionals such as engineers, DNA/Forensic Analysts, and Computer Technologists are highly sought.
- **Impact:** MoDOT alone has approximately 800 engineers employed to maintain state infrastructure.
- **Applicability:** A successful technical career program for engineers could easily translate into other high demand STEM-related fields.
  - Or even other professions and social sciences such as medicine, law, sociology, psychology, and economics.

# Technical Career Paths are for:

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- Subject-matter experts
- Dedicated achievers
- Project managers
- Innovators
- Mentors



# Lack of technical career paths result in challenges for agencies and engineers

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- **Wasted talent: some excellent engineers are average supervisors**
  - Some motivated individuals apply for promotional opportunities and pay increases, not based on the desire to supervise
  - State loses resources which would be better utilized for technical skills rather than supervising personnel
- **Limited promotional opportunities offer little incentive to grow**
  - Individuals that do not desire to supervise have zero upward mobility
  - Employees must leave agency to pursue promotional opportunities
- **The state suffers loss of institutional knowledge**
  - Knowledgebase is limited as experts leave agency or become supervisors, decreasing or stagnating use of technical skills
  - Production efficiency decreases without experts to mentor new employees

# Survey provided insight directly from engineers

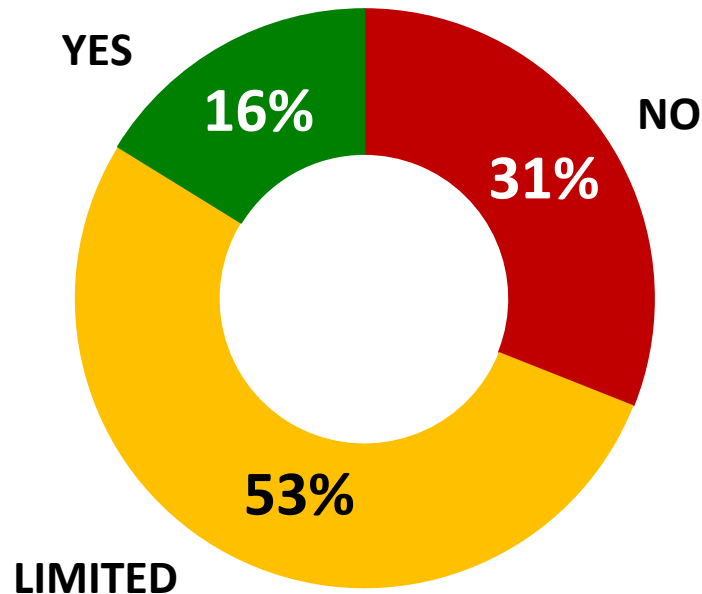
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- Scope?** Current promotional landscape, perception of available opportunities
- Who?** 800 MoDOT and DNR engineers statewide
- How?** Survey sent via email on December 4, 2018
- Responses?** 358 responses received



# Over 80% of respondents felt their promotional opportunities were limited or non-existent without supervising

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**Question 1:** Does your agency have progressive promotional opportunities that don't involve supervising staff (i.e. technical career paths)?

# Voice of Engineer: Lack of Career Path

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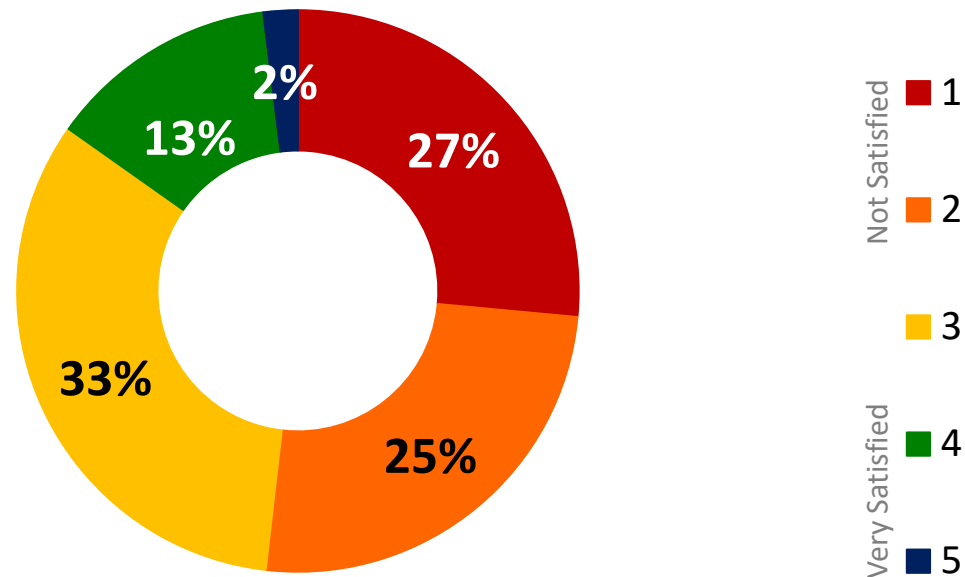
“I am at the top of my career path. I will have to work another 10 years without any promotions. *I am stuck* with no way to move up.”

- Survey Respondent



# Over 50% of respondents felt unsatisfied with promotional opportunities

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**Question 2:** On a scale of 1 to 5, with 1 being low and 5 being high, rate how satisfied you are with the promotional opportunities offered in your agency.

# Voice of Engineer: Supervision Required

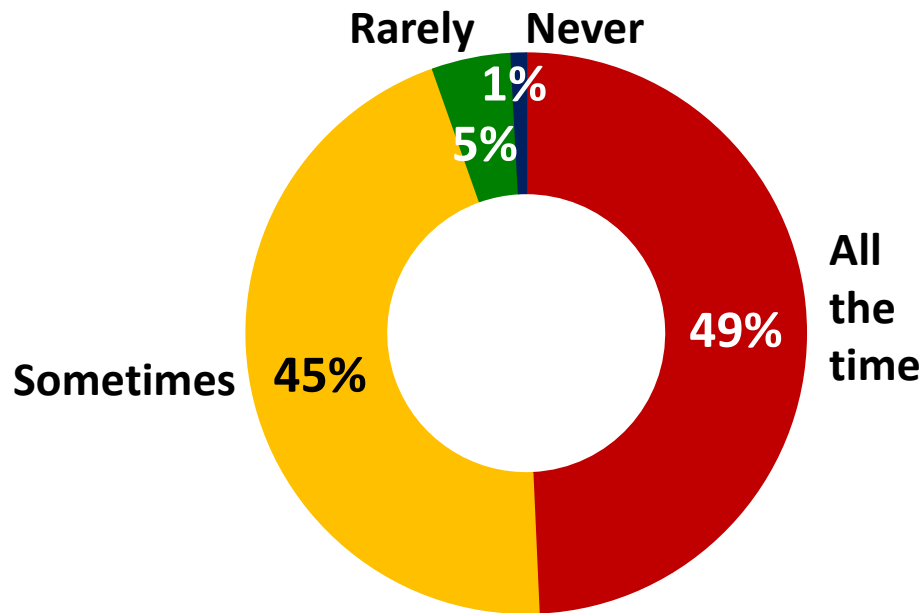
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“We have some REALLY smart folks in our department whom we don't want to lose, but there is **no pay increase for them available unless they take on supervision** — a bad idea depending on the person. We seem to pair the very technical decision making in the same job description as the people manager, but those are totally different skill sets.”

- Survey Respondent

# Nearly 50% believe people without a desire to supervise take supervisor positions as the only way to get promoted

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**Question 3:** Do you believe people in your agency apply for and accept supervisory roles without a desire to supervise because there is no other way to get promoted?

# Voice of Engineer: Unmotivated Supervisors

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“I'm good at my job, but dislike supervising. The only way to get more salary was to supervise.”

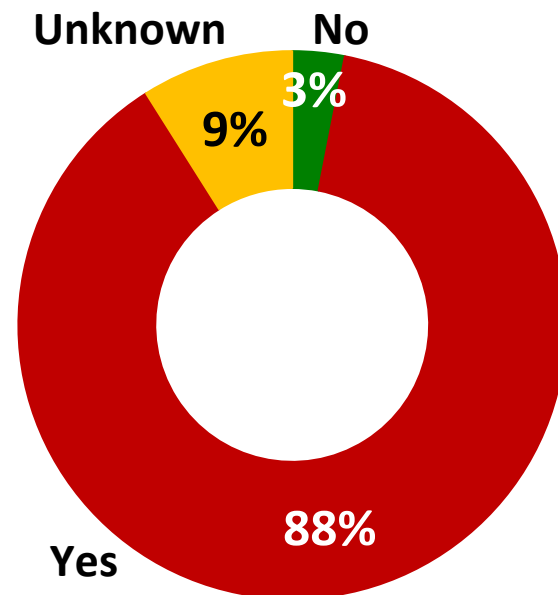
- Survey Respondent

“BINGO! There are people that love cranking out work but take supervisory promotions to provide for their family. They do their supervisory job but are not employee motivators.”

- Survey Respondent

# Nearly 90% of respondents thought the private sector offers better opportunities

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**Question 4:** Do you feel that the private sector offers better non-supervisory promotional opportunities for people in your field?

# Voice of Engineer: Poor Promotional Opportunities

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“For too long there has been no opportunity for promotion on the technical side (no technical track), which **forces a choice between stagnation, supervision or leaving for the private sector.**”

- Survey Respondent

# Four examples highlight commonalities and differences

	DNR Environmental Engineer (Proposed)	MoDOT Bridge Design Department	Private Business (WSP)	Federal CIA
Limited Number of Positions	✓	✓		✓
Number of Years Required	✓		✓	
Recognition in Field	✓	✓	✓	✓
Professional Publications		✓	✓	
Professional Organizations			✓	
Continuing Education	✓		✓	✓
Examples of Project Leadership	✓		✓	✓
Professional Certification	✓	✓	✓	✓



# DNR proposes reorganization to improve recruitment, retention, and expertise

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## Who?

DNR Environmental Engineers (~22 positions)

## What?

- No increase in full-time employees
- Selections based on professional qualifications
- Additional responsibilities include research and mentoring
- Increase in title, prestige, and salary



# MoDOT example shows continued benefit

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## Who?

MoDOT Bridge Design Department (~40 positions)

## What?

- Professional Engineer license required
- Value as in-house experts
- Expectations allow for “deeper dive” in area of expertise
- Example: when Minnesota’s bridge collapsed due to failure of a gusset plate, this position became the statewide expert on gusset plates and implemented new inspection and design procedures





# Private Sector example requires academic-level achievements for advancement

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## Who?

WSP – an international Architecture & Engineering Firm

## What? Academic Model for Technical Careers

- No limit on number of positions
- Academic-style achievements required
- Unique expertise and accomplishments that add value to company
- Titles include Principal and Technical Fellow



# Federal CIA example realized value in allowing analysts to pursue increased technical expertise

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## Who?

Senior Analytic Service within CIA

## What?

- Advanced technical position within area of expertise
- More professional freedom for continuing education
- Additional compensation and greater opportunity for promotion



# The Numbers Speak for Themselves in Agency Studies

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## **MoDOT studies:**

2:1 Benefit/Cost Ratio of technical career paths

\$27 million in turnover costs last year

## **Loss of MSHP Crime Lab DNA Analyst:**

Training costs = \$150,000

Impacts to productivity = 598 fewer cases analyzed



# Recommendations

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**Implement DNR's proposed program for Environmental Engineers**

**Pilot eight technical career positions in MoDOT's St. Louis District**





# Next Steps

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- Verify DNR proposal prior to implementation.
- Establish technical career path best practices for MoDOT (consider Washington, Iowa, and Maryland).
- Implement technical career paths at both agencies by July 1, 2019.
- After one year, monitor turnover rate trends, resurvey impacted positions, and review practices.

# Voice of Engineer: Stronger Future

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If the ranks of supervisors came from people who truly want it and have the personality and skills to do it well, I think **the whole organization will be stronger now and in the future.**”

- Survey Respondent

