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INDIANA DEPARTMENT OF TRANSPORTATION
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INDOT Training Gap Analysis, Developing a Training Program for INDOT Workforce Development (New, Front-Line, Supervisors) and Smart Tool for Effective Planning for Workforce



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JOINT TRANSPORTATION RESEARCH PROGRAM

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15. Supplementary Notes Conducted in cooperation with the U.S. Department of Transportation, Federal Highway Administration. The primary goal of the study was to understand reasons for workforce turnover, addressing INDOT's employee attraction and retention strategies. This objective was achieved by dividing the project into four tasks, each focusing on different criteria. Task A focused on understanding workforce development needs and gaps by determining training opportunities available at INDOT and understanding the different training methods and frequency of training required. Additionally, Task A also benchmarked workforce development programs with industry and other neighboring states. Task B comprised performing a comprehensive numerical and text data analysis of the workforce using exit interview data to identify the reasons contributing to workforce turnover at INDOT. Task C and D focused on developing a survey instrument to identify workforce development needs for current staff and develop a technical program for the employees based on feedback. The study concluded that INDOT needs to address different demographics with different needs to tackle the broader challenges surrounding workforce development. The employee survey also highlighted the employee sentiment and preferences which INDOT needs to take into consideration. These findings result into recommendation of specific actions that address the main factors affecting workforce turnover and steps that INDOT can take to attract and retain its employees.			
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EXECUTIVE SUMMARY

Introduction

Workforce turnover has become a significant challenge for any organization, and public transportation agencies in the US are not immune to it. To address these challenges, attraction and retention of employees is important. This study aims to aid the Indiana Department of Transportation (INDOT) in understanding the factors causing high turnover rates and how they can be addressed. Task A aimed to understand INDOT's workforce development needs via evaluating INDOT's current training courses available on its learning management system (LMS), determining various methods of delivery and frequency for training, and benchmarking steps undertaken by private industry and neighboring state departments of transportation. Analysis of the results of engagement survey between 2022–2024 that INDOT conducts annually aided in that understanding. The survey gathered responses across multiple factors like culture, job satisfaction, manager, communication, growth, compensation, and benefits. Additionally, to better understand INDOT's workforce outlook and identify the root causes of turnover, Task B integrated both numerical and textual analyses of employee data. The dataset included information on current employees (as of September 2024), recruitment, terminations, promotions, and demotions from 2021–2023, as well as demographic data of INDOT terminations from 2021–2023, and exit surveys between July 2022 and June 2024. Between 2021 and 2023, INDOT experienced an unusually high cumulative turnover of 57% of its workforce. For numerical data, statistical analyses were conducted at both the organizational level (Section 4.1) and the individual level (Section 4.2). For the textual data in exit surveys, Natural Language Processing techniques were used to extract key themes from the comments of departed employees who answered six open-ended questions (Section 4.3), and word clouds were generated to highlight high-frequency keywords across different demographic groups (Section 4.4). This combined approach provided a comprehensive understanding of both workforce challenges and employee perspectives regarding turnover. Task C developed and administered INDOT's Workforce Training Needs Survey across six domains to measure participation, preferences, barriers, skill gaps, and organizational support. The instrument combined multiple choice scales with open comments, was pilot tested with about ten employees, and introduced a training gap metric that compares training effectiveness to self-reported proficiency by skill area. The web-based survey was conducted through Qualtrics in November 2024 to 1,908 targeted employees and received 386 responses, a 20.2% response rate. Task D translated these results into a five-part workforce development roadmap that sequences design, pilot, rollout, and evaluation within a one-year cycle. Each recommendation summarizes Quarter 1 through Quarter 4 plan and links each initiative to stakeholders and deliverables.

Findings

The analysis of the engagement survey responses highlighted compensation as the lowest rated factor by the employees, highlighting the dissatisfaction. Additionally, the engagement survey identified trends of various demographics of employees across age, gender, tenure, education, and location, over three years and how employee perception has changed over time. The task also identified that workforce development is rated very highly by current as well as employees seeking new jobs, as reported by recruiters across the industry. Upon further investigation, the need for detailed analysis of the training courses, delivery method and frequency was identified. The numerical analysis of exit interviews, highlighted that INDOT had an unusually high turnover from 2021 to 2023, with Highway Technicians affected the most, particularly in the LaPorte District. The exit surveys from 353 former employees revealed demographic differences in workplace experience based on age, gender, ethnicity, tenure, location. For instance, older employees (60+) reported the most positive workplace experience, while those aged 40–49 expressed the lowest satisfaction; early-career employees showed strong satisfaction with workplace experience that declined after six months. Job role comparisons confirmed that Highway Technicians consistently reported the lowest workplace satisfaction, followed by Engineers and Executives/Directors, while interns, seasonal staff, and rehired employees expressed the highest satisfaction. The analysis identified Compensation, Personal Reasons and Growth Opportunities as the top reasons due to which the employees left, followed by Senior Leadership, and Communication, while Job Security, Workload, and Schedule were the least impactful. The textual analysis identified fourteen themes related to turnover, categorized by their frequency across six survey questions, with the high-impact theme of Immediate Supervisor, which appeared in all six questions. Second, mid-impact themes such as Job Duties, Culture, Compensation, Senior Leadership, and Growth Opportunities appeared in three or four questions, and low-impact themes such as Resources, Schedule, Workload, Communication, Job Security, Expectations vs. Reality, Personal Reasons, and Emotional Ambivalence appeared once or twice. According to the Task C survey, 50.00% of employees take training online, 41.93% take training in a blended format, and about 5% take training mostly in person. The top selection factors are professional development value at 80.1% and timing at 74.2%, which points to content relevance and schedule fit as primary drivers of participation. The most cited barriers are lack of relevant courses at 26.06% and time constraints at 22.80%, with workload during training periods also elevated. The most requested content areas are department specific training at 25.30% and practical, hands-on training at 24.01%, followed by leadership at 18.7% and emerging technologies at 17.3%. Project management and data and software skills exhibit the largest negative training gaps at about minus 0.93 and minus 0.88, while safety and compliance are near parity. Job satisfaction is high at 77.35% satisfied or very satisfied, but advancement opportunities and work resources rank lowest among job aspects. Organizational support for development is most often rated average at 44.01%, and employees

call for clearer information about rewards at 25.52% and greater reward amounts at 23.96%.

Implementation

Based on the findings from the engagement survey in Task A, it is recommended that INDOT have a major focus on workforce development which can help in employee retention and attraction. To prioritize workforce development, it is recommended that INDOT evaluate its training courses, review the method of delivery and frequency in detail to ensure the training courses are par with industry standards and serve the purpose of retaining employees. Additionally, INDOT should also focus on trends identified for specific employee demographics based on the engagement survey. The analysis of exit interviews leads to recommending INDOT to prioritize retention efforts for Highway Technicians, especially in LaPorte District. INDOT needs to improve workplace experience by learning from specific demographic groups. It is advisable to implement policies that address targeted groups across gender, age, location, job function for onboarding, employee satisfaction, promotion opportunities, benefits. Employee retention can be improved by strengthening compensation, enhancing support for personal needs, and expanding growth opportunities. Retention strategies should also be tailored to demographic groups by considering age, gender, tenure, and work location. Based on the textual analysis, INDOT needs to prioritize addressing concerns related to high impact theme by including leadership training, accountability systems, and regular feedback. INDOT also needs to take action on mid-impact themes (Job Duties, Culture, Compensation, Senior Leadership, and Growth Opportunities) through clearer roles, improved

workplace culture, better compensation, valuing employee feedback, and establishing clear career pathways. INDOT also needs to monitor low-impact themes, including Resources, Schedule, Workload, Communication, Job Security, Expectations vs. Reality, Personal reasons, and Emotional Ambivalence. Third, INDOT needs to develop targeted retention strategies that address the unique concerns of different employee demographic groups. Based on the analysis of the survey, the team proposes five initiatives that respond directly to the evidence from survey results. The communication strategy deploys SuccessFactors training alerts, supervisor talking points for monthly meetings, a SharePoint idea portal, and monthly workforce development updates to increase awareness and access. The Curriculum Advisory Board meets on a semiannual schedule, applies a standard review workflow, and targets at least three to five significant course updates or new offerings per year to maintain relevance. The annual Workforce Development Report consolidates learning and human resource data, defines an evaluation metric set, and publishes by Quarter 4 to guide planning and resource allocation. The awards and recognition program issues digital badges through peer nomination, integrates with existing platforms where feasible, and maintains an intranet wall of fame to reinforce participation and performance. The early career fundamentals program provides fifteen-to-thirty-minute online modules with on-the-job checklists and role-based training catalogs that are refreshed twice per year to standardize onboarding and guide development. Implementation follows the Quarter 1 design, Quarter 2 pilot, Quarter 3 agency wide rollout, and Quarter 4 evaluation sequence with metrics that include completion rates, portal submissions, communication satisfaction, number of curricula updated, catalog usage, and on time report publication.

CONTENTS

1. INTRODUCTION	11
1.1 Scope	11
1.2 Deliverables	11
1.3 Timeline	11
2. LITERATURE REVIEW	11
2.1 Workforce Challenges in Transportation Agencies	11
3. TASK A: UNDERSTANDING WORKFORCE DEVELOPMENT NEEDS	12
3.1 Engagement Survey Analysis	12
3.1.1 Education	12
3.1.2 Age	14
3.1.3 District	15
3.1.4 Tenure	16
3.1.5 Gender	17
3.2 Workforce Development Training	18
3.2.1 Training Frequency	18
3.2.2 Methods of Delivery for Training	19
3.3 Case Study/Industry Benchmarking	22
3.3.1 Walmart	22
3.3.2 Company Culture and Communication	22
3.4 State Benchmarking	22
3.4.1 Michigan DOT	22
3.4.2 Ohio DOT	23
3.4.3 Tennessee DOT	24
3.4.4 Wisconsin Department of Workforce Development	24
3.5 Learning Management System	25
3.6 Summary	27
4. TASK B: WORKFORCE OUTLOOK AND TURNOVER REASONS	27
4.1 Organizational Level Numerical Analysis	30
4.1.1 Workforce Outlook (As of 9/3/2024)	30
4.1.2 Trends of Recruitment, Termination, Promotion, and Demotion (2021–2023)	31
4.1.3 Turnover Numbers across Job Roles and Location (2021–2023)	31
4.2 Individual Level Numerical Analysis	32
4.2.1 Individual Demographics	32
4.2.2 Individual Difference in Workplace Experience	33
4.2.3 Exit Factors Analysis	49
4.2.4 Demographic Analysis of High-Impact Exit Factors	51
4.3 Textual Data Analysis Using Natural Language Processing (NLP) Method	55
4.3.1 Question 1: Please explain what was different than you expected?	56
4.3.2 Question 2: What would it take for you to return to the organization?	58
4.3.3 Question 3: What were your most important reasons for leaving the organization?	60
4.3.4 Question 4: What recommendations do you have to make the organization a better place to work?	61
4.3.5 Question 5: If you know of any compliance or integrity issues that have not been addressed with the organization (e.g., improper, unethical or unlawful behavior), please explain	62
4.3.6 Question 6: Is there anything else you would like to add?	63
4.3.7 Conclusion of The Analysis Results from Q1 To Q6	64
4.4 Textual Data Analysis Based on Different Demographic Groups	65
4.4.1 Textual Data Analysis Based on Age Group	65
4.4.2 Textual Data Analysis Based on Ethnic Group	65
4.4.3 Textual Data Analysis Based on Highest Education Level	65
4.4.4 Textual Data Analysis Based on Gender	66
4.4.5 Textual Data Analysis Based on District Location	67
4.4.6 Summary	67

5. TASK C & D: SURVEY INSTRUMENT & TECHNICAL PROGRAM	67
5.1 Survey Design and Development	67
5.2 Survey Distribution and Collection	68
5.3 Survey Results	69
5.3.1 Demographics	69
5.3.2 Job Satisfaction	70
5.3.3 Training Preferences and Opportunities	71
5.3.4 Training Barriers and Needs	72
5.3.5 Skill Assessment and Development Needs	74
5.3.6 INDOT Organizational Support for Workforce Development	75
5.4 Workforce Development Roadmap	76
5.4.1 Recommendation 1: Communication Strategy	77
5.4.2 Recommendation 2: Curriculum Advisory Board	79
5.4.3 Recommendation 3: Annual Workforce Development Report	82
5.4.4 Recommendation 4: Digital Badges and Recognition Program	83
5.4.5 Recommendation 5: Early-Career Micro-Learning Pathways and Role-Based Training Catalogs.	86
6. CONCLUSIONS	88
7. RECOMMENDATIONS	89
REFERENCES	90
APPENDICES	92
Appendix A. Key Aspects on Workplace Experience.	92
Appendix B: Definitions of Key Terms	92
Appendix C. Supplementary Figures and Tables for Section 2.2.2.	92
Appendix D: Rating Items on Exit Factors from the Exit Survey	92
Appendix E: Comments from Departing Employees in the Exit Survey (Open questions)	92
Appendix F: Figures From Section 2.2.4	92
Appendix G: Figures From Section 2.3.	92
Appendix H: Figures From Section 2.4.	92
Appendix I: INDOT Training Vendors	92
Appendices References	92

LIST OF TABLES

Table 3.1 LMS Benchmarking.	26
Table 4.1 Culture Difference by Education.	35
Table 4.2 The Summary of Themes From Q1 to Q6.	64
Table 4.3 Summary of Themes and Their Impact Levels on Employee Turnover.	65

LIST OF FIGURES

Figure 1.1	Gantt Chart.	11
Figure 3.1	Engagement Survey Response by Education (2022).	13
Figure 3.2	Engagement Survey Response by Education (2023).	13
Figure 3.3	Engagement Survey Response by Education (2024).	14
Figure 3.4	Engagement Survey Response by Age (2022).	14
Figure 3.5	Engagement Survey Response by Age (2023).	15
Figure 3.6	Engagement Survey Response by Age (2024).	15
Figure 3.7	Engagement Survey Response by District (2022).	15
Figure 3.8	Engagement Survey Response by District (2023).	15
Figure 3.9	Engagement Survey Response by District (2024).	16
Figure 3.10	Engagement Survey Response by Tenure (2022).	16
Figure 3.11	Engagement Survey Response by Tenure (2023).	16
Figure 3.12	Engagement Survey Response by Tenure (2024).	17
Figure 3.13	Engagement Survey Response by Gender (2022).	17
Figure 3.14	Engagement Survey Response by Gender (2023).	17
Figure 3.15	Engagement Survey Response by Gender (2024).	18
Figure 3.16	INDOT Training Courses on LMS by Sources.	25
Figure 3.17	INDOT Training Courses on LMS by Method of Delivery.	25
Figure 4.1	Job Distribution of Current Employees as of September 3rd, 2024.	30
Figure 4.2	Age Distribution of Current Employees as of September 3rd, 2024.	30
Figure 4.3	Location Distribution of Current Employees as of September 3rd, 2024.	31
Figure 4.4	Recruitment Trends From 2021 to 2023.	31
Figure 4.5	Termination Trends by Type From 2021 to 2023.	31
Figure 4.6	Promotions and Demotion Trends From 2021 to 2023.	31
Figure 4.7	Turnover Distribution Across Job Roles Based on Overall Termination Data.	32
Figure 4.8	Turnover Rates Across Locations Based on Overall Termination Data.	32
Figure 4.9	Turnover Rates by Age Groups.	32
Figure 4.10	Turnover Rates by Generations.	32
Figure 4.11	Turnover Rates by Ethnicity.	33
Figure 4.12	Turnover Rates by Education.	33
Figure 4.13	Turnover Rates by Tenure.	33
Figure 4.14	Turnover Rates by Job Roles.	33
Figure 4.15	Culture Difference by Age.	34
Figure 4.16	Culture Difference by Generation.	34
Figure 4.17	Culture Difference by Gender.	35

Figure 4.18 Culture Difference by Ethnicity.	35
Figure 4.19 Culture Difference by Tenure.	36
Figure 4.20 Culture Difference by Employment Type.	37
Figure 4.21 Culture Difference by Location.	37
Figure 4.22 Culture Difference by Job Roles.	38
Figure 4.23 Percentage of Employees Citing Each Factor as the Main Reason for Leaving.	49
Figure 4.24 Percentage of Employees Reporting Strong Impact Factors on Leaving.	50
Figure 4.25 Percentage of Employees Reporting Some Impact Factors on Leaving.	50
Figure 4.26 Percentage of Employees Reporting No Impact Factors on Leaving.	51
Figure 4.27 The Distribution of High-Impact Exit Factors by Age Group.	52
Figure 4.28 The Workflow of the Textual Data Analysis.	56
Figure 4.29 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 1.	57
Figure 4.30 Word Cloud of Responses by Age Group.	66
Figure 5.1 Overview of Survey.	68
Figure 5.2 Age of Survey Respondents.	69
Figure 5.3 Gender of Survey Respondents.	69
Figure 5.4 Work Duration of Survey Respondents.	69
Figure 5.5 Job Category of Survey Respondents.	69
Figure 5.6 Job Satisfaction of Survey Respondents.	70
Figure 5.7 Level of Satisfaction Regarding Work Being Valued by the Organization.	70
Figure 5.8 Ranking of Workplace Satisfaction Factors by Priority.	70
Figure 5.9 Distribution of Training Delivery Methods.	71
Figure 5.10 Information Sources for Training Programs.	71
Figure 5.11 Relative Importance of Factors Influencing Training Attendance Decisions.	71
Figure 5.12 Principal Barriers to Attending Training.	72
Figure 5.13 Preferred Training Content.	72
Figure 5.14 Primary Limitations of Current Training Programs.	72
Figure 5.15 Comparison of Average Employee Proficiency and Perceived Training Effectiveness Across Key Technical and Soft Skills.	74
Figure 5.16 Identified Priority Areas for Additional Training at INDOT.	74
Figure 5.17 Staff Assessment of INDOT's Support for Workforce Development.	75
Figure 5.18 Additional Resources Identified by Staff to Improve Engagement With Development Opportunities.	75
Figure 5.19 Perceived Benefits of Available Workforce Development Programs.	75
Figure 5.20 Suggested Changes for Better Program Support.	75
Figure 5.21 Suggested Workforce Development Roadmap of INDOT.	76

1. INTRODUCTION

The public transportation agencies in the U.S., such as state Department of Transportation (DOTs), face significant challenges in retaining the workforce that threaten the sustainability of their operations (Gallagher & Villwock-Witte, 2016; Harper et al., 2018; Metro et al., 2020, 2021). Workforce retention is crucial for public transit agencies to maintain reliable service, preserve institutional knowledge, control costs, and foster a positive organizational culture. Additionally, there has been increased volatility in the job market, leading to challenges faced by public and private industries to attract and retain employees. It becomes imperative to understand the reasons behind employee attrition and high turnover rate. This study aims to understand those reasons.

1.1 Scope

This study aims at understanding INDOT's workforce and its needs. The study is divided into four tasks:

- **Task A:** Understand workforce development needs, determine training opportunities available at INDOT including evaluation of its Learning Management System. Understand the different training methods available and the frequency of training required. Benchmark the workforce development programs with industry and other states.
- **Task B:** Perform comprehensive analysis (numerical and text historical data) of workforce outlook and identify the reasons contributing to workforce turnover at INDOT using exit interview data.
- **Task C & D:** Develop a survey instrument to identify workforce development needs for current staff and develop a technical program for current INDOT employees based on feedback and analysis in previous tasks.

1.2 Deliverables

The following are the deliverables for the study.

- Review of peer states activities related to workforce retention, evaluation of the current gaps for INDOT current workers, including skills needed and supporting courses to address these gaps.
- A statistical model showing the impacts of demographic and workplace information on the reasons for leaving among INDOT workforce.
- A list of key factors contributing to the high turnover rate within INDOT, considering different groups of workers.
- Training opportunities for INDOT staff.

1.3 Timeline

The study is performed over two years. Figure 1.1 (below) provides the Gantt chart for the project.

2. LITERATURE REVIEW

2.1 Workforce Challenges in Transportation Agencies

State transportation departments across the United States face a convergence of workforce challenges spanning the entire employee lifecycle. Key problem areas include recruitment of qualified personnel, retention of skilled staff, continuous staff development, and succession planning for impending retirements (Zolnik & Sutter, 2010). A looming wave of retirements is particularly pressing: a significant portion of the state DOT workforce is nearing retirement age, raising concern about loss of institutional knowledge and expertise. Recent estimates

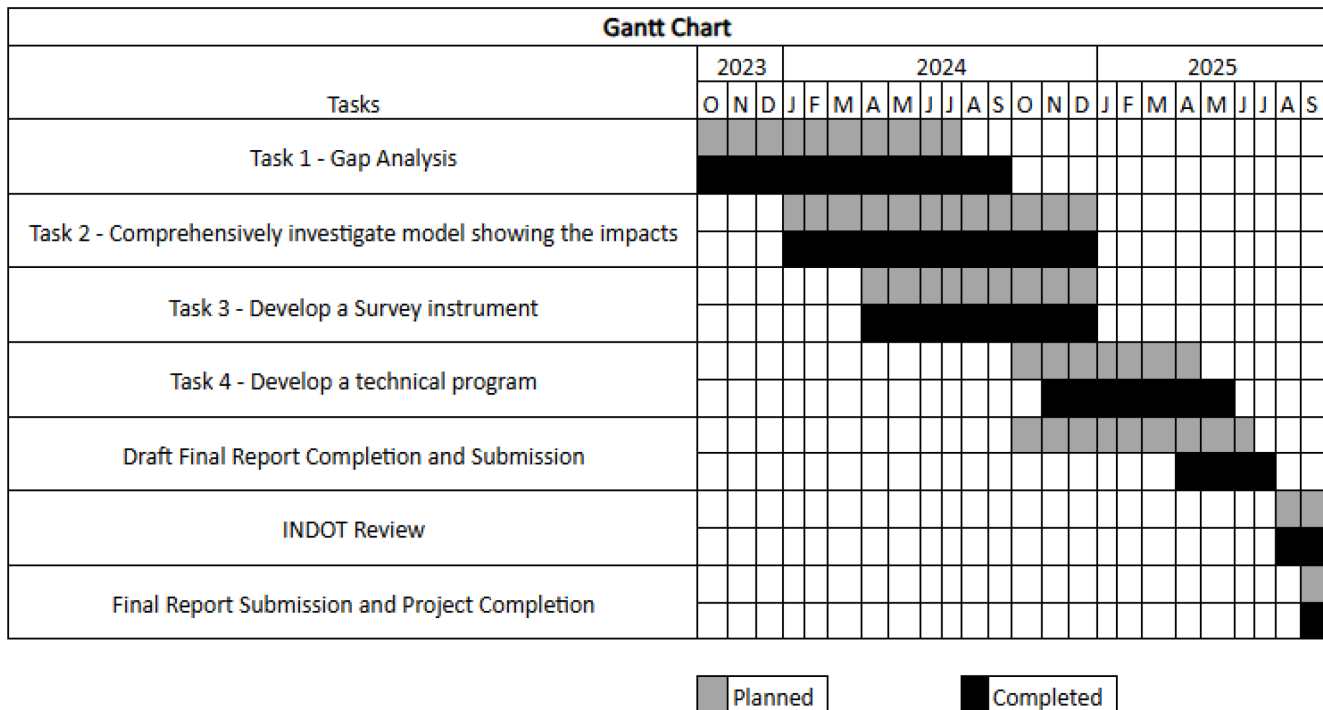


Figure 1.1 Gantt Chart.

indicate that roughly 40% of state DOT employees will be eligible to retire within just a few years (Harrison et al., 2025). This “silver tsunami” threatens to deprive agencies of veteran knowledge faster than it can be replaced, creating experience gaps in critical operational and engineering roles.

At the same time, DOTs are struggling to attract new talent and keep existing employees in the face of intense labor market competition. Private-sector firms often lure away transportation professionals by offering higher salaries and faster promotions, opportunities that public agencies have difficulty matching. A recent study of state DOT employees found that better pay and advancement prospects in the private sector were the primary reasons public-sector staff considered leaving their agency (Metro et al., 2021). These recruitment and retention difficulties are further exacerbated in certain contexts; for example, rural districts within state DOTs experience especially acute challenges in filling positions and retaining staff, with employees in those regions reporting that agency leadership is not fully attuned to their needs and career growth opportunities (Metro et al., 2021). In short, transportation agencies not only face a shrinking pool of applicants but also risk losing the talent they do hire to external competitors.

Beyond demographic shifts and competitive pressures, the evolving nature of transportation work itself has introduced new skill requirements that many DOTs find challenging to meet. Rapid advances in technology and data analytics, the push toward intelligent transportation systems, and an emphasis on multimodal solutions mean that today’s DOT workforce needs competencies not traditionally required in highway agencies. State DOTs increasingly require interdisciplinary skill sets and adaptability to handle emerging issues (from automated vehicles to resiliency planning) that are reshaping transportation practice (Click et al., 2024). This evolution has also underscored the importance of diversifying the workforce. Agencies recognize that broadening their talent pipelines to underrepresented groups and fostering inclusive work environments is essential to securing the varied skills and perspectives needed for future transportation programs (Click et al., 2024). In summary, the workforce challenges for transportation agencies are multifaceted: an aging and retiring workforce, difficulties in recruitment and retention amid external competition, and the imperative to acquire new skills and diversity in an era of rapid change.

3. TASK A: UNDERSTANDING WORKFORCE DEVELOPMENT NEEDS

3.1 Engagement Survey Analysis

INDOT conducts engagement survey for its employees annually since 2013. The survey collects demographic information such as age group, district location, ethnic group, highest education level, sex, marital status, military status, position title, tenure. The survey consists of participant responses to questions related to metrics like Culture, Job Satisfaction, Manager, Executive Leadership, Communication, Growth & Development, Compensation, Benefits. This study analyzed the survey results for each year—2022, 2023, and 2024, and

compared the trend for the metrics over the years. The survey was conducted on a scale of 1 to 5.

In 2022, there were 1,853 participants for the survey. The number of participants increased to 2,613 in 2023 and remained steady in 2024 survey at 2,620.

3.1.1 Education

The following are the different education levels reported by INDOT employees:

- Less than high school (HS)
- High school (HS) graduate
- Technical school
- Some graduate school
- Some college
- Associate degree
- Bachelors level
- Masters level
- Doctorate (academic)
- Doctorate (professional)
- Not indicated

In 2022, according to Figure 3.1, compensation (2.71) had the lowest average rating across all education groups, driven by employees with doctorate (professional) and some college degree as highest education rating it lower than 50%. Meanwhile, manager (3.97) had the highest average rating across all education group, driven by employees with education less than high school.

In 2023, as shown in Figure 3.2, compensation (3.12) still remained the lowest average rated metric across all education groups, although the rating improved compared to 2022. The average rating for compensation was mainly driven by employees with highest education as some college and technical school. Meanwhile, the highest average rated metric across all education groups was job satisfaction (4.03) with employees with doctorate (academic) degree providing the highest rating.

In 2024, as distinctly visible in Figure 3.3, compensation (3.02) continued to remain the metric with lowest average rating across all education groups, with employees with highest education from technical school having the lowest perception of it. Although the perception of compensation was lower than in 2023, it was higher than in 2022. Meanwhile, job satisfaction (3.99) continued to be the metric with highest average rating across all education groups, mainly driven by employees with doctorate (professional) degree, rating it higher than other groups.

Based on the analysis, employees with lower education tend to rate compensation lower than those with higher education.

3.1.1.1 Trend Analysis. The number of participants increased from 2022 to 2024 across all education groups except participants with education less than high school. Participants with doctorate (professional) education increased the highest, 140%, from 2022 to 2024.

From 2022 to 2024, rating for culture by employees with less than high school education saw the maximum decline of 14.31% while the maximum increase in average rating for culture was by

Education - 2022

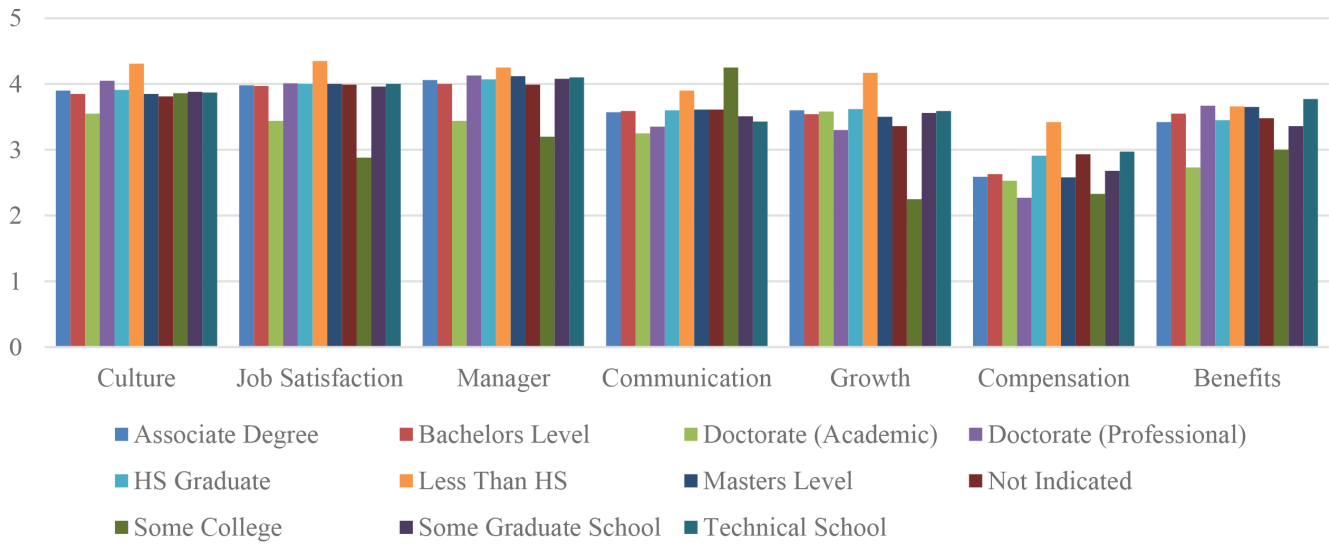


Figure 3.1 Engagement Survey Response by Education (2022).

Education - 2023

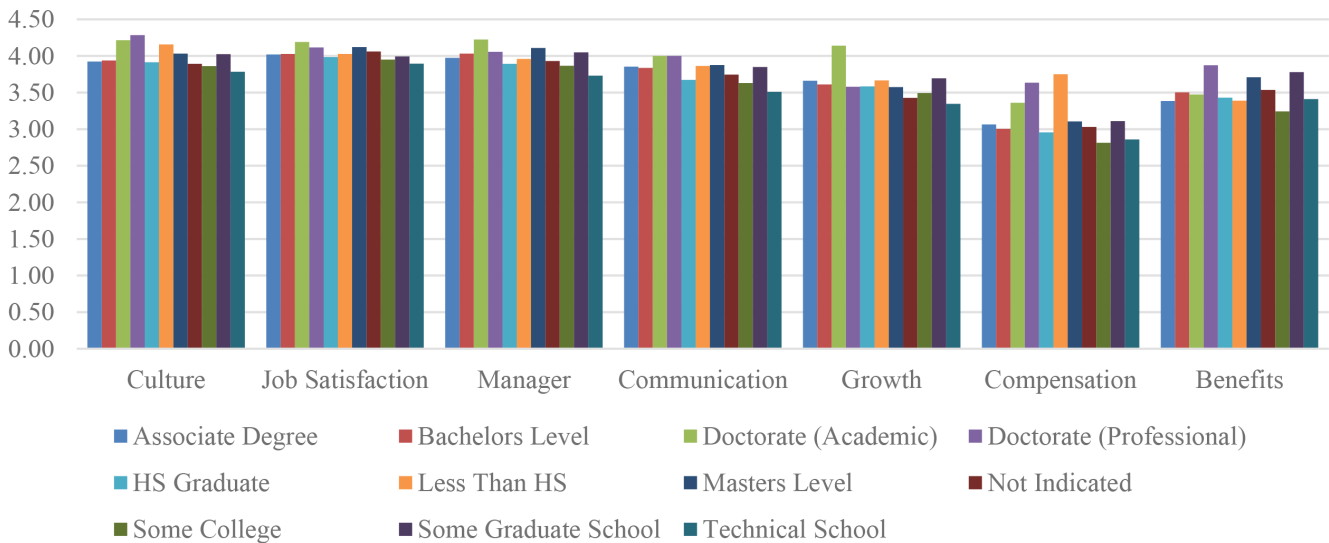


Figure 3.2 Engagement Survey Response by Education (2023).

employees with doctorate (academic) education, 11.05%. Over the same period, average rating for job satisfaction increased by 38.37% by employees with some college education while employees with less than high school education saw the highest decline of 7.78%. Simultaneously, the average rating for manager saw a decline across all education groups except for employees with some college education whose average rating increased by 19.31% while it decreased maximum for employees with high school degree, 14.30%. The average rating by

employees with doctorate (professional) education increased for communication by 17.93% while that by employees with some college education decreased by 16.61%. Meanwhile, for the perception of growth, the average rating by employees with some college degree increased by a significant 59.37% while those with education less than high school reported a decline of 14% in average rating for growth. Generally, employees across all education groups reported an increase in average rating for compensation from 2022 to 2024, employees with doctorate

Education - 2024

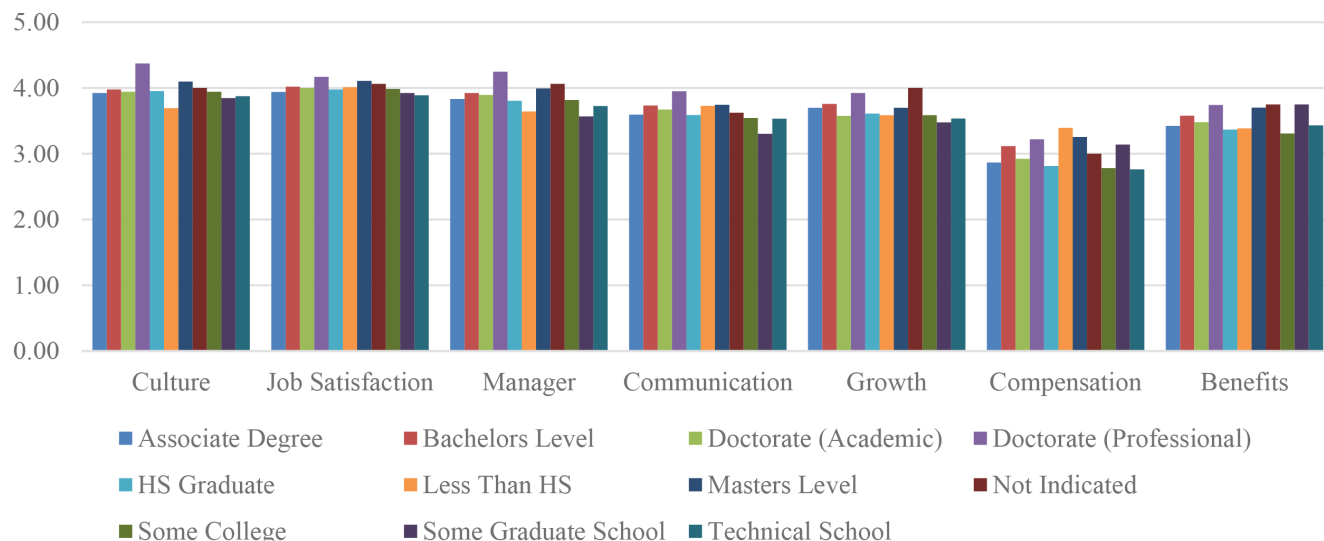


Figure 3.3 Engagement Survey Response by Education (2024).

(professional) education reported the highest increase at 41.82% while employees with education of technical school reported a decline of 6.97%. Similar to compensation, the perception of benefits generally increased in terms of average rating from 2022 to 2024, with rating by employees with doctorate (academic) education increasing 27.50% while those with education of technical school declined by 9%.

Overall, the average rating across all metrics for employee participants with high school education decreased between 2022 to 2024. Participants with education of technical school have rated compensation and benefits lower in 2024 than in 2022, while participants with doctorate (academic) education generally have a better perception of all metrics except for growth. Participants with education from some college have a higher perception of growth, job satisfaction and manager in 2024 compared to in 2022.

3.1.2 Age

INDOT employees are categorized by the following age groups:

- Under 30
- 30–39
- 40–49
- 50–59
- 60 and over

In 2022, as shown in Figure 3.4, the compensation (2.76) metric had the lowest average rating by employees across all age groups. This rating was driven mainly by employees in the age group 30–39 and 40–49. Simultaneously, the metric that had the highest average rating was job satisfaction (3.99), with employees 60 and over giving it the highest rating.

Age - 2022

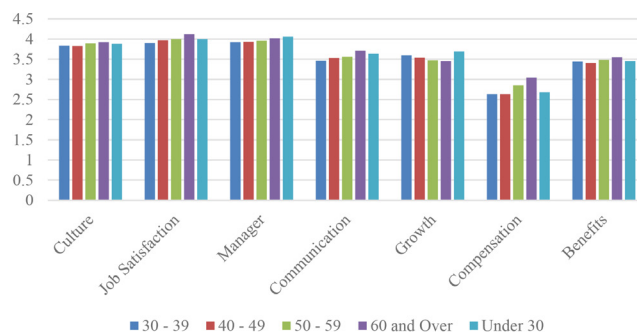


Figure 3.4 Engagement Survey Response by Age (2022).

In 2023, as clearly seen in Figure 3.5, compensation (3.03) remained the metric with lowest average rating, although it increased compared to 2022. The main categories influencing this rating were age groups 60 and over and under 30. Simultaneously, job satisfaction (4.00) too remained the highest average rated metric across all age groups, mainly driven by age group 50–59.

In 2024, according to Figure 3.6, compensation (2.94) continued to remain the metric with lowest average rating across all age groups, with age group 40–49 contributing the most. Although the average rating reduced in 2023, it is still higher than the rating in 2022. Meanwhile, job satisfaction (4.00) continued to remain the metric with the highest average rating, with employees under 30 rating it higher than any other age groups. The average rating for job satisfaction has remained similar to that in 2023.

Based on the analysis, age groups 40–49 usually have a lower perception of compensation which could point to need for increased.

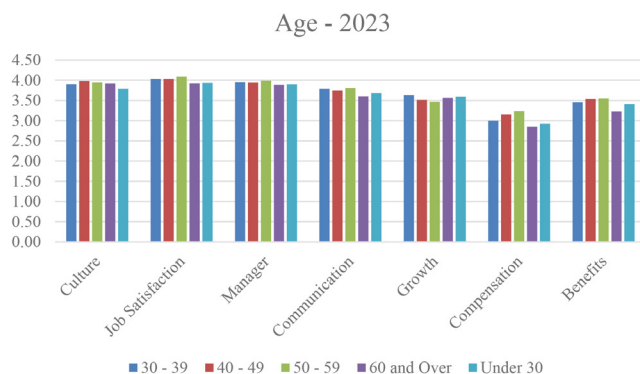


Figure 3.5 Engagement Survey Response by Age (2023).

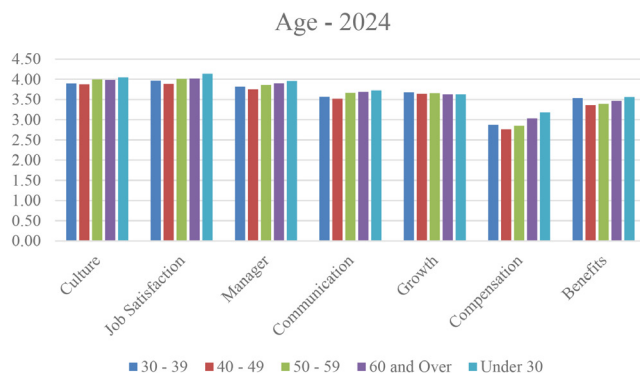


Figure 3.6 Engagement Survey Response by Age (2024).

3.1.2.1 Trend Analysis. As noted, the number of participants at INDOT have increased between 2022 and 2024, the number of participants increased across all age groups, with the maximum increase noted in the age group of under 30. (55.04%).

From 2022 to 2024, the average rating for culture across all age groups has increased with a maximum increase reported by employees in the age group under 30. Meanwhile, the perception of job satisfaction has increased by 3.44% for employees under the age 30 while that of employees aged 60 and over has declined by 2.47%. Generally, the perception of manager for all age groups has declined over 3 years; employees aged between 40 and 49 have reported the highest decline, 4.62%. Over the same period, employees aged 30–39 reported an increase in the average rating of communication (3%) while employees 60 and over reported a marginal decline (0.54%). Employees aged 50–59 reported the highest increase in average rating of growth, closely followed by age group 60 and over (5.12%) while employees under 30 reported a decline of 1.68%. Simultaneously, employees under 30 saw the highest increase in average rating of compensation (18.60%) and benefits (3.16%) while employees 60 and over reported a small decline in average rating of compensation (0.24%) and those aged 50–59 showed a decline in average rating of benefits (2.55%) in 2024 compared to 2022.

Overall, it can be observed that employee participants aged 30 have a higher perception of all metrics except for manager

and growth. Participants over 50 have rated compensation and benefits poorly compared to in 2022 while participants aged 30–39 have seen an increase in average rating for growth and job satisfaction both.

3.1.3 District

INDOT has the following districts:

- Central Office
- Crawfordsville
- Fort Wayne
- Greenfield
- LaPorte
- Seymour
- Vincennes

In 2022, as shown in Figure 3.7, all districts on average rated compensation (2.78) the lowest, with central office rating it the least than any other district. Concurrently, all the districts rated job satisfaction the highest on average, with employees from central office providing the highest average rating.

In 2023, as evident in Figure 3.8, compensation (3.04) again was the lowest average rated metric across all districts, with employees from LaPorte District rating it the lowest among other districts. However, the average rating for compensation increased compared to 2022. Simultaneously, job satisfaction (3.99) had

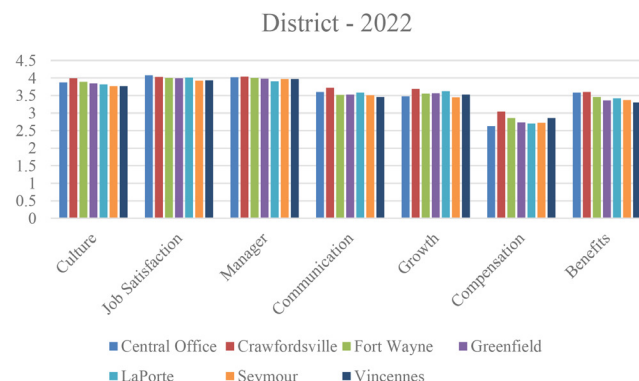


Figure 3.7 Engagement Survey Response by District (2022).

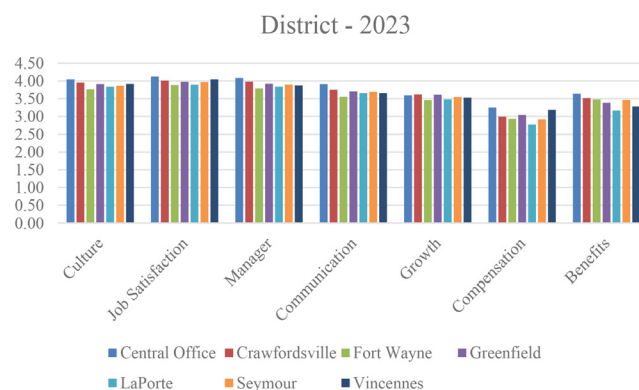


Figure 3.8 Engagement Survey Response by District (2023).

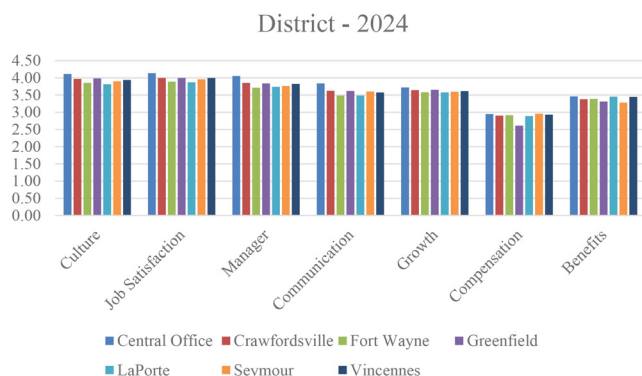


Figure 3.9 Engagement Survey Response by District (2024).

the highest average rating across all districts, mainly driven by employees from central office.

In 2024, according to Figure 3.9, compensation (2.88) continued to be the lowest average rated metric across all districts. The average rating reduced compared to 2023, it was still higher than 2022. Employees from Greenfield District had the lowest average rating for compensation among other districts. Concurrently, job satisfaction (3.98) continued to remain the metric with highest average rating across all districts, with employees from central office rating it higher than other districts.

Based on the analysis, employee participants from central office generally have a lower perception of compensation, while they have also consistently rated job satisfaction higher than any other district.

3.1.3.1 Trend Analysis. The number of participants has increased across all districts but the Crawfordsville District saw the maximum increase with 64.62%. Seymour District also saw a significant increase (over 50%) in the number of participants at 51.12%.

Between 2022 and 2024, the average rating for culture increased the highest in the Central Office by 5.86% while it decreased the highest in Fort Wayne District. The manager metric had similar changes to culture, where average rating in central office increased highest by 0.69% and that in Fort Wayne District declined the most by 7.12%. Meanwhile, the job satisfaction average rating increased the most in central office by 1.38%, it declined the most in LaPorte District by 3.59%. Simultaneously, similar changes were observed for the communication metric across the district offices, where central office average rating increased the maximum by 6.50 % and that in LaPorte District declined the maximum by 2.89%. Employees in central office reported the highest increase in growth (6.98%) and compensation (12.06%) while Crawfordsville District reported the highest decline by 1.31% and 4.64% respectively. Over the same period, Vincennes District observed the highest increase in average rating by 4.53% while Crawfordsville District reported the highest decline of 6.14%.

Overall, the employee participants at central office had a higher perception of all the metrics in 2024 compared to 2022 except benefits while Crawfordsville participants had the lowest perception of growth, compensation and benefits.

3.1.4 Tenure

INDOT employees have a tenure ranging from a few months to several years for which the categories are detailed here:

- Less than 3 months
- 3 months – < 6 months
- 6 months – < 1 year
- 1 year – < 3 years
- 3 years – < 5 years
- 5 years – < 10 years
- 10 years – < 15 years
- 15 years or more

In 2022, as clearly seen in Figure 3.10, participants across tenure rated compensation (2.76) with the lowest average rating, with employees having a tenure more than 5 years and less than 10 years having the lowest rating of all. Meanwhile, the manager (4.13) metric was rated the highest on average, driven primarily by participants with a tenure between 3 to 6 months.

In 2023, as shown in Figure 3.11, compensation (3.07) remained the metric with lowest average rating, even though the average rating increased compared to 2022. The low average rating was mainly driven by employees with tenure less than 3 months. Simultaneously, manager (3.99) was rated the highest on average by employees across all tenure. The average rating was mainly driven by employees with tenure 15 years or more.

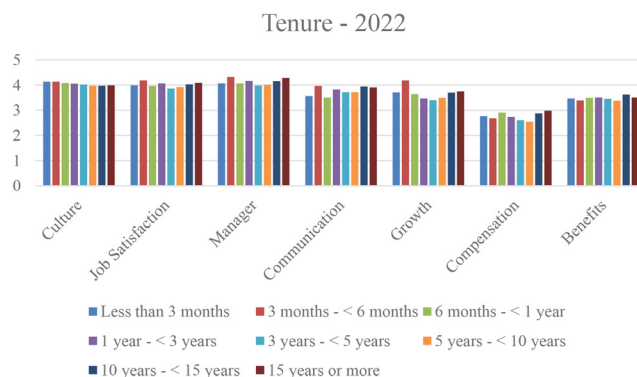


Figure 3.10 Engagement Survey Response by Tenure (2022).

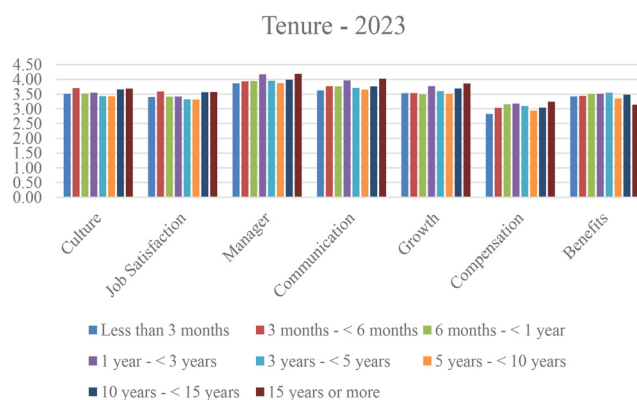


Figure 3.11 Engagement Survey Response by Tenure (2023).

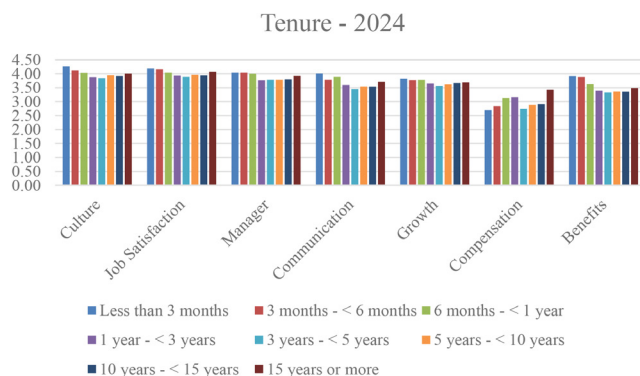


Figure 3.12 Engagement Survey Response by Tenure (2024).

In 2024, according to Figure 3.12, compensation (2.97) continued to remain the lowest average rated metric across employees with all tenure. Even though the average rating reduced in 2024 compared to 2023, it is still higher than in 2022. The main group impacting the rating was employees with tenure less than 3 months. Concurrently, job satisfaction (4.02) was the highest rated metric on average, driven mainly by employees with tenure less than 3 months.

Based on the analysis, employee participants with tenure less than 3 months usually have a lower rating for compensation, highlighting a potential trend for high turnover rate.

3.1.4.1 Trend Analysis. The number of participants with various tenures increased with a maximum increase in employees with a tenure of 3 to 6 months (100%). Participants with tenure between 1 to 3 years and 3 to 5 years followed suit with an increase of 69.79% and 67.22% respectively. Meanwhile, the number of employees with a tenure less than 3 months declined by 7.29%, highlighting the high turnover rate in early career employees.

Between 2022 and 2024, the average rating of employees with tenure less than 3 months for culture increased the maximum with 3% while the average rating of employees with tenure between 1 to 3 years and 3 to 5 years decreased the maximum by 4.34%. During the same period, the average rating of job satisfaction increased the most for employees with tenure less than 3 months and decreased the most for participants with tenure 1 to 3 years. The average rating for manager decreased for participants across all tenures in 2024 compared to 2022, with the most decline for employees with tenure 1 to 3 years (9.54%). Simultaneously, for compensation, the perception increased the most for employees with tenure less than 3 months (12.68%) while it decreased the most for employees with tenure 10–15 years (10.18%). For growth, the average rating increased the highest for participants with tenure 1 to 3 years while it reduced the highest for employees with tenure 3 to 6 months. The average rating for compensation increased the highest for employees with tenure between 1 and 3 years (15.36%) while it decreased the highest for those with a tenure less than 3 months (2.81%). Employees with tenure between 3 to 6 months reported the highest increase in average rating of benefits (14.64%) whereas employees with a tenure of 10 to 15 years reported the highest decline (7.26%).

Overall, participants across all tenure reported decline in average rating of manager. Generally, employee participants with a tenure less than 3 months reported increasing in average rating for all metrics except compensation, while participants across all other tenure reported an increased average rating for compensation. A decline in average rating was observed for participants with tenure between 1 to 3 years for culture, job satisfaction, and manager.

3.1.5 Gender

INDOT employees have reported male or female genders.

In 2022, as shown in Figure 3.13, employees had the lowest average rating for compensation (2.76) including both the gender. However, females had a lower average rating for compensation compared to males. Meanwhile, both males and females had the highest average rating for manager (4.05) with females rating it higher than males.

In 2023, as evident from Figure 3.14, compensation (3.03) remained the metric with lowest average rating for both men and women, although it increased from 2022. Men had a relatively lower rating for compensation compared to women. Simultaneously, the job satisfaction (4.00) metric had the highest rating across both genders, with females rating it higher than males on average.

In 2024, compensation (2.94) continued to remain the metric with lowest average rating for both men and women, with males

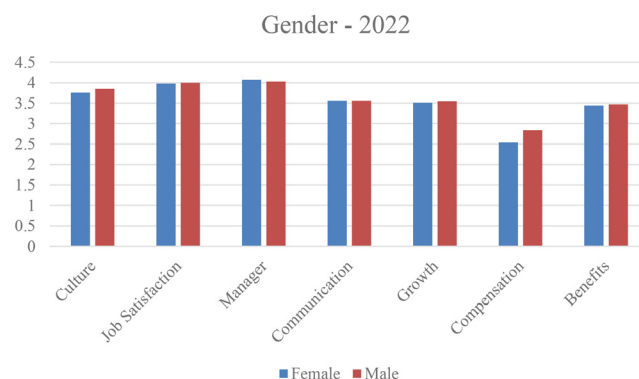


Figure 3.13 Engagement Survey Response by Gender (2022).

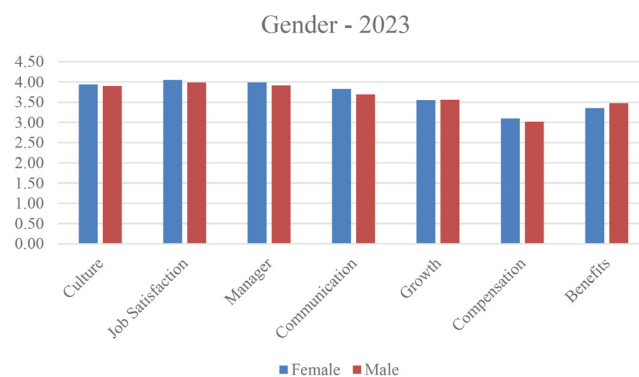


Figure 3.14 Engagement Survey Response by Gender (2023).

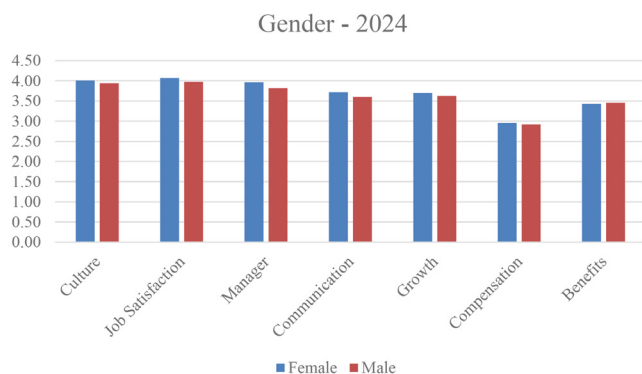


Figure 3.15 Engagement Survey Response by Gender (2024).

rating it slightly lower than females (Figure 3.15). Although compensation is the lowest rated metric, the average rating reduced in 2024 compared to 2023 but still remained higher than in 2022. Concurrently, job satisfaction (4.02) remained the metric with highest average rating for both men and women, with females rating it higher than males on average.

3.1.5.1 Trend Analysis. Over the years, both male and female number of participants have increased similarly at INDOT, 40.25% and 41.96 respectively. Additionally, there are three times more male employee participants at INDOT than females and this ratio has remained consistent across the three years.

The average rating for females has increased higher than males across all the metrics—culture (40.25%), job satisfaction (2.24%), communication (4.54%), growth (5.45%), and compensation (16.26%). Across the remaining two metrics, manager and benefits, the average rating has decreased for both males and females, however, the decrease is higher for males for both the metrics at 5.32% and 0.38% respectively.

Overall, female participants have a higher perspective of all the metrics than males and the average rating has increased more for females in 2024 than in 2022 compared to males.

3.2 Workforce Development Training

Training and workforce development is key to a very important metric—employee retention. Several studies suggest that organizations retain employees when they provide opportunities for development and growth. A study performed by Built In (Heinz & Urwin, 2024) suggested that 45% workers reported they are more likely to stay in their role if their company provided more training while another study by LinkedIn (Hess, 2019) reported that over 90% employees would stay with their company if they are provided with opportunities to grow and develop.

Another LinkedIn study (Van Nuys, 2021) suggested that companies that allow employees to grow internally within an organization and have clear career pathways retain their employees twice as long.

In addition to studies that report employee responses, another study by SHRM (Bergeron, 2022) reported that 83% of hiring managers suggested that providing employee training is a beneficial perk to attract the right candidates and talented employees.

This insight from the hiring managers is in line with surveys conducted by various sources that reported on the importance of training and development when workers look for new jobs. The LinkedIn study (Van Nuys, 2021) suggested that about 76% Gen Z employees consider learning new skills to be vital for a successful career. Another study by Gallup (Gallup, 2017) reported that 59% of Millennials consider learning and development as the most important factors when applying for jobs.

Training and re-training should take place in a proactive capacity, not a reactive one.

A study by Survey Monkey (Gitlin, n.d.) reports that 59% of employees believe training improves their overall job performance while the Gallup study (Gallup, 2017) suggests that companies are 17% more productive when employees receive the training they need.

Besides providing formal training that is more traditional and aligned with the job, it is important to offer informal training for employee development. Informal training includes conferences, seminars, webinars, etc. These helps keep employees engaged and motivated by building professional relationships and networking with people within the industry.

3.2.1 Training Frequency

There's no need to train and re-train an employee in their core job duties on a weekly basis; however, safety training, as part of ongoing training, might be required more frequently. According to Peck (2025), a study conducted by PwC reported that even though about 74% of workers are interested in undergoing training and acquiring new skills, 33% of them preferred to do it once a quarter while 25% preferred to do it monthly. About 8 out of 10 respondents to a study by HR Dive (O'Donnell, 2018) reported that training done frequently is more important than that done only once. Therefore, it is important to understand and determine the frequency of training. It can depend on:

- The needs and requirements of the organization
- Expertise level
- Type of training

Some of the most commonly accepted training frequency intervals (Global Electronic Services, 2020) include:

- **Daily:** General skills upkeep and improvement. For example: Continuous improvement exercises or drills.
- **Weekly:** Briefs and updates for routine and generalized topics. For example: Safety briefings. Updates on company policies or procedures.
- **Monthly:** Certain skills and topics that require ongoing refinement. For example: Soft skills development such as communication or leadership. Technical skills training related to specific job functions.
- **Quarterly:** Job-specific skills and standards. For example: Performance reviews and goal-setting sessions. Workshops or seminars focused on industry trends or innovations.
- **Annually:** Specialized training and recertification. For example: Mandatory compliance training (e.g., sexual harassment prevention, cybersecurity). Professional certification renewals. Leadership development programs.

The HR Dive study (O'Donnell, 2018) also found that more than 90% of workers prefer employee training that is easy to complete, fun & engaging, and relevant to their position. While about 90% of workers prefer flexible training, that is available anywhere and anytime. So, in addition to considering the frequency of training, it is important to review the method of training as well.

3.2.2 *Methods of Delivery for Training*

All training involves disseminating knowledge. For many years, employee training in workplaces has been conducted in a classroom setting, led by an instructor. Today, however, learning and development teams have discovered new ways to deliver employee training that are more befitting to the needs of individual employees. There are about as many training delivery methods as there are different topics employees need to be trained on. For this reason, finding the training approach that best fits your company's and employees' needs can be challenging.

Non-traditional learners need to see the need for training. For example, if the training will affect pay, address safety issues, or fulfill legal requirements, the training is perceived as necessary. Non-traditional learners have limited time, have more (on their minds) with family, bills, and other issues and expenses and do not want to do anything that is perceived that wastes their time.

The traditional Learning Management System (LMS) is losing its central role in corporate learning due to its outdated design and limited relevance to modern learning needs. LMS platforms were originally built around the SCORM standard, developed in the 1980s for tracking training records from CD-ROM based programs. However, the paradigm of a "course catalog" that the LMS is based on feels outdated and cumbersome for many users.

Many employees do not engage with the LMS unless required, leading to low utilization rates and negative perceptions of HR and L&D departments. As a result, companies are starting to explore alternatives to the traditional LMS, particularly as new technologies emerge to fulfill compliance management functions more efficiently and cost-effectively.

Overall, the LMS market is evolving as organizations seek more dynamic and inclusive solutions to meet the diverse learning needs of employees in today's digital age. Frequency of safety training that company do. A new category of software, called the "Learning Record Store" or LRS (not a place to buy stuff, but a place to store data), is now available, and these systems are likely to replace much of the compliance functionality in the LMS over time.

Different Methodology used by other companies to complement their LMS are:

1. On the job video gaming: Training that is provided on the job.
2. X-API: The Experience API (X-API), also known as Tin Can, enables tracking of various digital activities beyond traditional training courses. Like how Google and Facebook track online activities, X-API allows products like learning record stores to monitor all digital activities in the workplace.
3. Walmart: Walmart is exploring the integration of virtual reality (VR) technology into its employee training programs, particularly

in Walmart Academies, to enhance the learning experience, assess skills effectively, and introduce new training methods. The primary challenge is to ensure that VR training aligns with the company's business goals while also providing tangible benefits in terms of employee performance and skill acquisition.

Methodology Used: Walmart has collaborated with its HR organization and VR vendors to develop and implement VR training programs. The training content is designed to simulate real-world scenarios, such as Black Friday rushes and customer interactions, to provide employees with hands-on experience in a safe environment. Walmart emphasizes the importance of involving HR professionals in the training process to ensure that they understand the benefits of VR training and can effectively manage the devices and facilitate training sessions at store locations. Additionally, HR managers are advised to partner with VR vendors for at least two years to fully leverage the technology and align it with business objectives. Despite the potential of VR training, HR managers are cautioned not to neglect human interaction, as VR training is still in its early stages and may require additional support for employees, particularly in high-stress or extreme scenarios.

Results: Walmart has observed improvements in employee test scores following VR training sessions, with test score increases ranging from 5% to 10%. Additionally, the implementation of VR has allowed Walmart to introduce new training programs and replace lengthy traditional modules with shorter VR modules. As of February, approximately 10,000 employees have undergone skills management assessments using VR, and Walmart plans to expand VR training to over 1 million employees across 4,000 stores. Other companies, such as Fidelity Investments and UPS, have also adopted VR for training purposes, citing benefits in areas such as empathy training and hazard identification for drivers.

4. Accenture: One hundred fifty-three employee volunteers, mostly females, from Accenture PLC participated in a two-day experiment. The study followed ethical guidelines and was approved by MIT. Participants were part of corporate training in Illinois or a short program at MIT. Fifty-four participants were excluded, leaving 99 for analysis. Attrition was high, possibly due to work commitments.

Participants were assigned to one of four conditions: Video, Spontaneous Discussion, Structured Discussion, or Interpolated Testing. They watched an instructional video about DevOps on Day 1. The Spontaneous Discussion Group discussed the video with colleagues, while the Structured Discussion Group had a guided discussion with an experimenter. The Interpolated Testing Group answered multiple-choice questions during the video. The next day, they completed a memory test with free-form and multiple-choice questions. The delay was to align with research on memory retention. The test included questions from the video and new ones.

Results: In the post-test, the Structured Discussion and Interpolated Testing Groups had higher mean scores (69.53% and 69.70%, respectively) compared to the Video and Spontaneous Discussion Groups (55.45% and 56.84%, respectively). In the Interpolated Testing Group, accuracy during

testing correlated positively with post-test scores on the same items. ANOVA showed a significant main effect of Condition, with the Interpolated Testing Group outperforming the Video and Spontaneous Discussion Groups. The Structured Discussion Group also outperformed the Video Group. No significant differences were found between the Video and Spontaneous Discussion Groups or between the Structured Discussion and Interpolated Testing Groups.

3.2.2.1 Online vs. Offline.

3.2.2.1.1 Online. Online education has several noteworthy benefits, the most important being its affordability and ease. Students can reduce the cost of education by saving money on transportation, housing, and on-campus supplies when they do not have to commute or relocate (Peck, 2024). Furthermore, students can maximize their productivity and contribute to a more effective learning process by using the time saved by not having to physically attend sessions. Because it's digital, online learning improves students' technology skills and gets them ready for a world where technology is everything. It's interesting to note that, in contrast to traditional classrooms, online learning environments frequently encourage more participation from students who would be afraid to speak up (University of the Potomac, 2014).

Still, there are certain disadvantages to online education. For students who thrive on in-person engagement, the absence of physical interaction might cause feelings of isolation. Detrimental effects on motivation and general pleasure may result from this isolation during the learning process. Additionally, students who struggle with time management or who need continual supervision may find it difficult to keep up with their assignments because online learning requires prominent levels of desire and self-discipline. According to Potomac.edu (n.d.), skilled use of digital tools by teachers is a prerequisite for effective online teaching. This may need extra training, which could hinder the smooth transmission of instruction. To make matters worse, technical glitches like poor connectivity can interfere with learning and seriously undermine the effectiveness of online learning.

3.2.2.1.2 Offline (In-person). Conventional education, which is typified by in-person encounters, has benefits of its own. Being physically present in the classroom enhances the learning process by allowing for quick feedback and active engagement. Students gain from direct mentoring and experiential learning experiences, both of which are often essential to mastering difficult subjects. Students can participate in networking events that are essential for both professional and personal development while they live on campus, which also offers a deeper social experience. Many students benefit from the sense of security and stability that the organized setting of traditional learning can offer.

In contrast, some students find traditional learning to be less cheap due to increased transportation, housing, and on-campus costs. The rigid timetables and required attendance can be burdensome, especially for individuals who have other responsibilities or a job to balance. Traditional learning takes more time

since it requires more time for preparation and travel to and from physical classrooms, which might take time away from study sessions and personal activities.

With over 6.7 million students (about twice the population of Oklahoma) enrolled in online courses and over 275 authorized online colleges, the move toward online learning is evident in the enrollment data (Peck, 2024). Remarkably, 30% of university students have taken at least one online course, demonstrating the increasing acceptance and assimilation of online learning into the larger educational context. Furthermore, the significance of digital resources in contemporary education is highlighted by the fact that 67% of college teachers believe that using online media tools is necessary for effective instruction.

Because of its affordability and customization, eLearning has become a popular choice for business training. eLearning offers flexibility in learning and enables customized, cost-effective training based on individual needs (Puri, 2018). Another benefit of eLearning is its time efficiency; employees may finish training more quickly and effectively when all the information is easily accessible. Because eLearning content is reusable, can be updated, and repurposed as needed, it also offers a one-time investment with long-term advantages. Moreover, eLearning platforms' scalability allows for expanding workforces without sacrificing quality.

Even with these benefits, there are still issues with e-learning in corporate environments, including protecting student privacy, keeping learners interested, and encouraging productive teamwork. To ensure the effectiveness and quality of training programs, addressing these difficulties calls for strong data security measures, efficient engagement techniques, and seamless communication channels (Tulsiani, 2024).

In conclusion, there are definite benefits and drawbacks to both traditional and online schooling. While it can be more flexible and economical, online learning necessitates an important level of self-discipline and technical proficiency. Though it is more expensive and offers less flexibility, traditional learning offers more regulated environments and richer human interactions. Despite its inherent problems, eLearning has shown itself to be a scalable, cost-effective, and efficient training option in corporate settings. The future of both online and traditional learning paradigms will be further shaped by the ongoing development of educational technologies and approaches.

3.2.2.1.3 Simulation. A study conducted by students at Purdue University focused on winter operation supervisors and snowplow drivers at the Indiana Department of Transportation (INDOT) to evaluate snowplow training and operations. Interviews were conducted with eight supervisors and ten drivers across various districts.

When asked for any additional information regarding the current status of adopting simulator in snow-plow driver training, three states that are currently using the driving simulator in training further provided the reasons for such an approach.

1. One state DOT stated that simulator could offer more training time during the summer, as well as extra safety when compared to training in an actual snowplow truck.

2. One state DOT explained that the simulator could offer various training scenarios and different weather settings.
3. One state DOT indicated that simulator provided realistic training to a large group of staff in a “very controlled environment.” Also, students can get immediate feedback from instructor and fellow students. Response from this state DOT also indicated that “utilizing the simulator also saves fuels and equipment maintenance.”

The survey allowed respondents to provide additional comments to the factors provided. Three respondents provided the following valid inputs.

1. One state DOT indicated that snowplow driving simulator was a great option as it can put drivers into extreme conditions to learn.
2. One state DOT did not recommend purchasing the simulator considering the ongoing maintenance concerns, as well as the dedicated staff who would be taken away from their normal duties. This DOT suggested that contracting the simulator can waive all of the associated problems of owning the system.
3. Similarly, another state DOT suggested that it would be more cost-effective to contract the simulator manufacturer to do the training instead of buying out the software and the equipment.

The research team developed recommendations to the Indiana Department of Transportation (INDOT) regarding the adoption of driving simulators for snowplow driver training, considering the Technology, Organization, and Environment (T-O-E) framework.

The key considerations for Simulation are:

1. Simulator Fidelity:
 - a. Technological advancements have significantly improved simulator fidelity.
 - b. Reviewed simulators feature haptic and sound feedback, high-fidelity graphics, high refresh rates, and immersive monitors.
 - c. Simulators replicate vehicle dynamics, including plow truck cabin design and controls.
 - d. Concerns remain about accurately simulating winter conditions and snowplow physics.
2. Vendor Support:
 - a. Vendor support includes trainer training services, available training scenarios, simulator maintenance, and warranties.
 - b. Basic training services are included with simulator purchase; additional services and scenarios require extra costs.
 - c. Maintenance typically involves software updates, patches, and annual inspections covered by a standard one-year warranty, with options for extension.
3. Relative Advantage:
 - a. Current INDOT training involves a 2-day course with lectures and hands-on practice.
 - b. Simulators can supplement this by offering realistic driving experiences, additional training opportunities before the winter season, and the ability to safely train in challenging scenarios.
4. Evaluation of Technical Benefits:
 - a. Includes measuring various technical data post-training to assess the effectiveness and benefits of the simulators.

These recommendations emphasize the potential benefits of simulators in enhancing the current training program, if concerns about realism and support are addressed.

3.2.2.1.4 Augmented/Virtual Reality (AR/VR). Augmented Reality (AR) and Virtual Reality (VR) technologies are the most promising tools in Instructional training. The immersive and interactive experiences these technologies provide offer employees new ways to learn and engage with their peers and instructors and absorb knowledge in a way that traditional instruction methods have not been able to replicate.

Following are the applications of VR in Oil & Gas Safety Training.

3.2.2.1.4.1 Oil and Gas Industry: Hazard Identification and Risk Assessment: VR training enables employees to identify potential hazards and assess risks within a lifelike environment. This empowers them to proactively mitigate dangers, thereby enhancing overall safety.

3.2.2.1.4.2 Equipment and Machinery Operation Training: Operating heavy machinery and equipment in the oil and gas industry requires precision and skill. VR simulations allow workers to familiarize themselves with machinery operations without the inherent risks associated with hands-on training.

Some of the popular companies have implemented VR training for safety training. Following are some of the examples:

- BP | Offshore VR Training: The energy company BP uses VR training to train employees efficiently and onshore. In so-called “immersive simulation environments,” personnel learn complex procedures in a safe environment.
- Safeway | Offshore VR Simulation: The Safeway company specializes in managing and engineering cargo handling. Safeway was looking for a quick and inexpensive solution to train their new employees. VR Owl therefore developed a virtual reality simulation training together with Safeway.
- Siemens | Offshore Wind Turbines: Siemens AG is one of the largest industrial production companies in Europe and the installation of wind turbines and rotor blades offshore is one of their activities. This is an expensive and time-consuming task and in order to do this successfully the employee must complete a lengthy training course.
- MAN | Motor Engine Training: MAN uses VR training to train its employees for maintenance of the engines on “AOPS.” These Arctic Offshore Patrol Ships are difficult to reach, making training difficult. The solution is a virtual ‘engine room’ where MAN trains its employees digitally.
- Shell | Offshore VR Training: Shell sees the value of virtual reality in “the entire life cycle of a project, from initial planning to construction to operation. The originally Dutch company modernizes and supplements the theory with practical virtual training in the field of safety, onboarding and maintenance.

VR offers an affordable, effective, remote-friendly way to provide employees with not only technical skills, but also “soft” skills such as leadership and resilience. With more than half of companies already integrating VR into strategy, it’s a good time for many companies to start or accelerate VR learning. The rise of the metaverse is creating further opportunities for VR-based upskilling and collaboration.

The PwC 2022 US Metaverse Survey (Likens & Mower, 2022) found that 51% of companies are either in the process of

integrating VR into strategy or have already built VR into at least one dedicated line of business. Thirty-four percent say that one of the biggest metaverse benefits they currently enjoy or foresee is “a more effective way to develop and train our people.”

Selected employees from a group of new managers in 12 US locations took the same training — designed to address inclusive leadership — in one of three learning modalities: classroom, e-learn and v-learn (VR). Following are the findings:

- VR learners were four times faster to train than in the classroom.
- VR learners are more confident to apply skills learned after training
- Employees are more emotionally connected to VR content
- VR learners are more focused

VR learning can be more cost-effective at scale: VR content initially requires up to a 48% greater investment than similar classroom or e-learn courses, it’s essential to have enough learners to help make this approach cost-effective.

VR training saves time, improves project reliability and, in some cases, is more cost-effective than traditional training methods.

3.3 Case Study/Industry Benchmarking

3.3.1 Walmart

According to the author (Hanna, 2019), this case study “explored Walmart’s plans for future workforce makeup and training, and its search for opportunities from digital infrastructure and automation.”

Walmart, being one of the giants in its sector, has invested heavily in technology—incorporating it in its stores. “This digital transformation creates new jobs, but, more important, it changes the nature of jobs, even entry-level ones.” Walmart has piloted and invested in robots to perform a variety of functions, from unloading trucks to scrubbing floors to scanning shelves and bringing items out of storage for curbside delivery orders.

This adoption and transition to new technology requires a lot of re-skilling of employees which has led Walmart to equally commit to the complex, costly effort required to train its human workers.

Walmart’s investments in wages and training for employees of \$1.2 billion and \$1.5 billion in 2015 and 2016—part of a move that boosted starting pay for frontline associates from \$9 per hour in 2015 to \$10 in 2016 (it hit \$11 per hour in early 2018). Walmart’s approach to training its workforce includes its focus on building long-term, transferable skills through efforts such as Pathways, a program that teaches associates about the retail business model, explains the “why” behind the work they’re asked to do, and helps develop the soft skills that are useful in any field. Workers who completed the program received a raise and had increased job opportunities.

Even though some employees complained that Walmart’s program lacked clarity and that it took too long to move through the various modules, Walmart has continued to develop and launch other programs for employee development and training.

One such program is its Academies program, which is focused on training and empowering hourly supervisors to directly manage team members.

Additionally, to continue its efforts, Walmart introduced a program in 2018 that offered workers the opportunity to enroll in online degree programs for \$1 a day in business, technology, and supply chain management at three different universities. In June 2019, the program expanded to six universities and 14 areas of study, including cybersecurity and computer science.

3.3.2 Company Culture and Communication

Companies with healthy, high-commitment, high-performance cultures have had comparatively less attrition during the pandemic. With the increasingly volatile job market and the growing need for employee retention, these principles are still applicable. This study (Beer, 2022) focuses on employees’ perception of workplace nature. Workers reported that a toxic workplace influenced attrition ten times more than compensation. Job insecurity or the fear associated with reorganization were the largest drivers at 3.5 times.

Allowing employees to safely speak the truth and share their opinion with their superiors enables senior management to learn about barriers to performance that employees see clearly—but that leaders often overlook or ignore. It is important to introduce such a governance and learning system that improves communication throughout the organization and makes the employees feel listened. Based on the practices implemented by companies like Southwest Airlines, Johnson & Johnson, Enterprise Rent-A-Car, following are some guiding principles offered by the author:

1. **Zero in.** Focus on the strategic and cultural issues that matter most to the organization’s success.
2. **Iterate between advocacy and inquiry.** The senior team advocates an organizational direction and then launches an inquiry into the organization’s strengths and its barriers to success.
3. **Make sure the conversation is constructive.** Keep the process by which lower levels share the truth with leadership disciplined and structured to prevent missteps and outbursts that will shut down the conversation.
4. **Make a plan.** Having heard the truth, diagnose root causes of problems and develop a systemic action plan to realign the organization.
5. **Make the leadership team accountable to those who provided feedback.** That is, let the whole organization know the whole truth—both the good as well as the embarrassingly bad and sometimes ugly. Talk about what you heard and what changes you are making.
6. **Check in regularly.** Repeat the process periodically for continuous improvement and change.

3.4 State Benchmarking

3.4.1 Michigan DOT

The Michigan Department of Transportation (MDOT) is responsible for Michigan’s nearly 10,000-mile state highway system, comprised of all M, I, and US-routes. It is the backbone of Michigan’s 120,000-mile highway, road and street network.

The state owns over 4,700 highway, railroad and pedestrian bridges, 665 miles of railroad track, roughly 2,700 miles of non-motorized trails, and four airports. Additionally, MDOT administers state and federal transportation programs for aviation, intercity passenger services, rail freight, and local public transit services.

MDOT is committed to:

- Serving residents and local communities with the highest level customer service.
- Improving transportation for all modes.
- Implementing new safety strategies to protect public health and environment.
- Seeking new ways to operate equitably, inclusively, and efficiently.
- Creating a transportation system that is safe, integrated, and resilient.

3.4.1.1 On Job Training. Created by the Federal Highway Administration (FHWA) and the Michigan Department of Transportation (MDOT), the primary purpose of the On-the-Job-Training (OJT) Program (Michigan Construction, 2021) is to offer equal opportunity for the training and upgrading of minorities, women and disadvantaged persons toward journey-level status in the highway construction trades. This effort will broaden the labor pool with skilled individuals.

3.4.1.2 High-Tech Workforce Preparation for Emerging Transportation Technologies. MDOT conducted a research study to prepare its workforce for emerging technologies. The team narrowed its focus to five areas of technology: mobile robotics, advanced traffic management systems, data analytics, mechanistic-empirical design and engineering, and complete streets design with context-sensitive solutions. The study was conducted by MDOT in collaboration with Center for Automotive Research and Workforce Intelligence Network aiming to recruit and maintain/upgrade a high-tech workforce for emerging technologies. The project was broken into five substantial tasks:

- Task 1: State of Practice Review for Transformative Technologies
- Task 2: Recommendation for Ideal Core Competencies Needed at MDOT and MDOT's Organizational Structure
- Task 3: Technology-enabled Workforce Strategic Plan
- Task 4: Training Materials for Current and Future Workforce
- Task 5: Future Workforce Recruitment Planning

To learn what skills MDOT will need to incorporate into its current workforce, the researchers examined MDOT's existing strategic plans, organizational structure and current practices, as well as national transportation employment statistics and the best practices of several other state DOTs. The team also reviewed the relevant academic and training programs established in Michigan to support the evolving needs of the transportation industry. These efforts led researchers to understand how other transportation organizations are managing the rapidly changing technological landscape, the resources available and the context within which MDOT's workforce strategies need to be implemented.

They offered several recommendations to strengthen the agency's workforce in the following five areas:

- **Ideal core competencies.** Seek workers with both technical skills, such as data analytics, artificial intelligence, neural networks, and

cybersecurity needs, and soft skills like a growth mindset, communication and emotional intelligence.

- **Organizational structure.** Model MDOT's program after the U.S. Chamber of Commerce's Talent Pipeline Management, which uses a supply chain management methodology, to ensure a steady pool of qualified candidates. Conduct skills mapping for positions across MDOT to help workers identify career pathways.
- **Recruitment.** Increase workforce diversity, engage with academia, embrace social media to reach younger workers, and quantify benefits to be competitive with the private sector.
- **Training and development.** Invest in diversified training programs and education assistance, establish a succession planning committee and understand workforce generational differences.
- **Retention.** Create employee support programs, implement a transparent system for promotions and incentives and provide leadership training.

The report concluded that MDOT needed to develop a broad recruitment strategy to understand and leverage available resources. It also recommended the DOT to collaborate with universities, take advantage of virtual career fairs, and develop defined career pathways and training for employees.

3.4.2 Ohio DOT

Ohio DOT has developed several programs around workforce development and training needs of its employees.

- State-sponsored employee development programs, such as from DAS:** The Office will coordinate agency participation in state-sponsored employee development programs. Notification of opportunities and guidelines for participation will be communicated to all affected employees.
- Highway Technician Academy ("HT Academy"):** This comprehensive training program for construction and maintenance employees is administered and funded by the Office. The Office manages all contracts with external vendors who provide instruction for the HT Academy.
- Personal and Professional Development Courses:** Courses relating to personal and professional development will be offered on an as-needed basis to employees of the department. These courses will be conducted by the Office. Requests for such classes will be made by district/division Training Coordinators.
- Equipment Training:** Training on equipment, including training for newly hired employees in the highway technician series, will be conducted by district training officers, with oversight and guidance provided by the Office. Proficiency assessments will also be conducted by district training officers, with oversight and guidance provided by the Office.
- Lead Ohio Foundations of Supervision:** This program, a requirement for all exempt employees who manage two or more direct reports, will be administered by the Office.
- Leadership Development Program:** This program which focuses on key competencies surrounding leadership will be administered by the Office. To be enrolled as a participant, an employee must be recommended by an administrator or deputy director.
- Mechanic, Auto Technician, Auto Body Worker Training:** This program, with the goal of maintaining industry standards in skill levels, efficiency, and cost effectiveness for all ODOT mechanics, auto technicians, and auto body workers, will be administered by the Office.

- H. **e-Learning:** Course offerings via e-Learning designed by the Office will be utilized by all department employees.
- I. **County Management Training Program:** This program for new and newly promoted Transportation Administrators and Transportation Managers will be administered by the Office.

3.4.3 Tennessee DOT

Tennessee DOT (TDOT) has embraced a strategic management approach, blending strategic planning with effective management practices to fulfill its mission in today's dynamic environment. This approach involves continuous evaluation of resources, results, critical issues, trends, and citizen needs to set priorities effectively.

Mission: To provide a safe, efficient, and reliable transportation system that supports Tennessee's economic growth and quality of life.

Responsibilities:

- Building and maintaining over 11,000 miles of state highways and bridges.
- Operating public transit systems in urban areas.
- Managing state airports and waterways.
- Planning and investing in future transportation infrastructure.
- Promoting safety and sustainability in transportation.

TDOT leadership is responsible for envisioning the strategic direction, policies, and tactical application of department objectives. This includes planning, operating, staffing, and budgeting the transportation program across all modes. Leadership is also tasked with recruiting, retaining, supervising, developing, and mentoring staff to ensure alignment with department objectives. Building relationships with industry partners to foster economic opportunity and innovation is also a key aspect of their role.

The TDOT Team Lead oversees professional and technical staff, applying and guiding the implementation of unit plans. They mentor and train their team, promoting empowerment, communication, and delegated authority. Using department policies and technical guidance, the Team Lead ensures the delivery of expected outcomes, pilots' national best practices, and drives innovation and efficiency. They develop work plans aligned with unit objectives, manage schedules and budgets, and ensure accountability of team members for achieving expected outcomes.

3.4.3.1 Performance Measurement and Analysis. Performance Measurement and Analysis are central to TDOT's operations. Established in 2004, the Performance Measurement Framework encompasses five key categories:

- Customer: Emphasis on overall customer service and satisfaction.
- Financial: Consideration of budget, funding, returns on investments, and cost containment efforts.
- Organizational Effectiveness: Evaluation of internal processes, technology utilization, productivity, and efficiency.
- Transportation System: Assessment of statewide transportation system performance, focusing on operation, preservation, and maintenance.
- Workforce: Focus on workplace environment quality and TDOT's capability to achieve its mission and strategic objectives.

3.4.3.2 Best Strategies for Hiring, Retaining, and Utilizing Minorities and Women. In December 2018, TDOT commissioned a research project with the University of Memphis, Tennessee State University, and Vanderbilt University to assess workforce diversity within the agency and identify strategies to enhance diversity and inclusion. The research involved a comprehensive approach, including literature review, statewide staff survey, workforce data analysis, interviews with agency leaders and other DOTs, and the development of a database of potential community partnerships. The findings led to recommendations aimed at fostering a more inclusive workplace culture, where individuals from diverse backgrounds feel valued and respected. Key findings from the research include:

- TDOT has shown a strong commitment to diversity and inclusion, with improvements noted in recruiting practices and programs aimed at promoting diversity awareness and respect within the organization.
- Significant progress has been made in attracting and retaining female and Black engineers, surpassing both state and national representation rates for engineering professionals.
- The Reconnect program has been highly effective in providing opportunities for employees to earn pay increases.
- Gender and sexual harassment complaints were reported more frequently by women, while race and retaliation complaints were reported more frequently by men. Complaints from Regions 2, 3, and 4 were overrepresented, but the total number of complaints was relatively low compared to the overall workforce.
- Women and minorities are underrepresented in certain job categories, particularly Operations Tech and TDOT Tech.

While most employees recognize a broad definition of diversity, satisfaction levels with the current organizational culture surrounding diversity are lower among Black, Hispanic, and female staff.

The study's results led to several recommendations for TDOT to enhance its workplace culture and promote diversity and inclusion:

- Redefine policies and practices to take a more strategic approach to diversity and inclusion.
- Implement strategies for attracting diverse candidates through comprehensive, agency-wide outreach and pipeline efforts involving community partners.
- Foster an inclusive workplace culture by emphasizing the value and importance of diversity and inclusion in alignment with TDOT's mission.

3.4.4 Wisconsin Department of Workforce Development

The Wisconsin Department of Workforce Development (DWD) is tasked with enhancing Wisconsin's workforce for the present and future. Its core duties involve offering job services, training, and employment aid to job seekers, while also collaborating with employers to fill job vacancies.

DWD administers various employment programs facilitating connections between employers and job seekers, especially focusing on individuals with disabilities, those with low incomes, and the long-term unemployed, to ensure sustainable employment outcomes. The department operates Wisconsin Job

Centers, aids youth in securing future-oriented jobs, safeguards worker rights, processes unemployment claims, and ensures compliance with workers' compensation laws.

There are six divisions within the Department which is headed by a secretary appointed by the Governor.

- Employment and Training
- Equal Rights
- Administrative Services
- Unemployment Insurance
- Vocational Rehabilitation
- Workers Compensation

The Department of Workforce Development (DWD) is dedicated to enhancing employment prospects for Wisconsin veterans through targeted business engagement and support for the veteran community.

At American Job Centers, veterans receive Priority of Service, ensuring they have access to long-term suitable employment and training opportunities. Veterans can connect with their local job center for assistance.

Disabled Veteran Outreach Program Specialists (DVOPs) offer personalized career services to veterans and eligible individuals facing significant barriers to employment. They help overcome obstacles, coordinate community resources, and provide access to education and training opportunities.

Local Veterans Employment Representatives (LVERs) engage with employers to promote hiring veterans. They organize job fairs, job clubs, and collaborate with apprenticeship and internship programs, business groups, and unions to advocate for training programs beneficial to veterans. Veterans can connect with their local veteran employment representative for support.

3.4.4.1 Workers Compensation for Workers. The Worker's Compensation Act ensures payment of reasonable medical expenses and compensation for lost wages due to work-related injuries or disabilities. Employers, whether self-insured or covered by worker's compensation insurance, are responsible for providing these benefits.

In case of work-related injuries, employees can access their employer's worker's compensation system for quality medical care, prompt benefits payment, and support for early return to work.

Wisconsin employers are mandated to carry Worker's Compensation insurance if they meet specific criteria, unless they qualify for self-insurance. This insurance protects employers from lawsuits related to employee injuries sustained while working.

Employers must have Worker's Compensation if they:

- Employ three or more full-time or part-time employees.
- Employ one or more employees to whom they've paid combined gross wages of \$500 or more in any calendar quarter for work done in Wisconsin.
- Is a farmer employing six or more workers on the same day for any 20 days during the calendar year?
- Out-of-state employers with employees working in Wisconsin must also provide worker's compensation insurance, endorsed to include Wisconsin as a covered state in their policy.

3.5 Learning Management System

An LMS, or Learning Management System, is a software application or a platform that aids in the creation, management, delivery, and tracking of online learning and training programs. It acts as a central place, that is engaging and interactive, for both educators and learners, streamlining the educational process.

According to Finances Online (Eira, 2020), nearly 40% of Fortune 500 companies use some kind of LMS for employee training to have a competitive edge. Hence, it is imperative for any organization to have a robust LMS.

INDOT has its own LMS for its workforce. INDOT's LMS provides a total of 1,923 training courses. These training courses are provided through different mediums and hosted by various sources. Of the total, the majority, 66% are LinkedIn Learning courses that are offered online while about 20% are external courses, offered by other institutions, and 12% are internal, while a few (22) are not categorized, as shown in Figure 3.16.

Across the various sources, as shown in Figure 3.17, the majority, led by LinkedIn Learning, are e-learning courses (1,687) followed by 211 courses that are instructor led and a handful (3) that are on-the-job training.

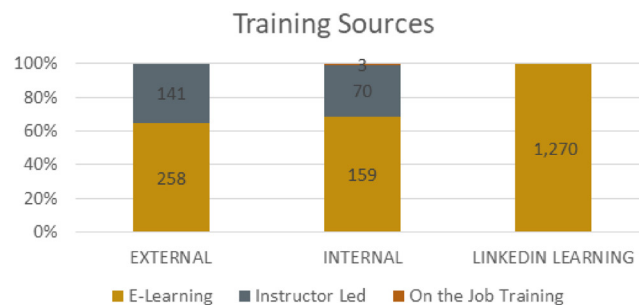


Figure 3.16 INDOT Training Courses on LMS by Sources.

Training Method of Delivery

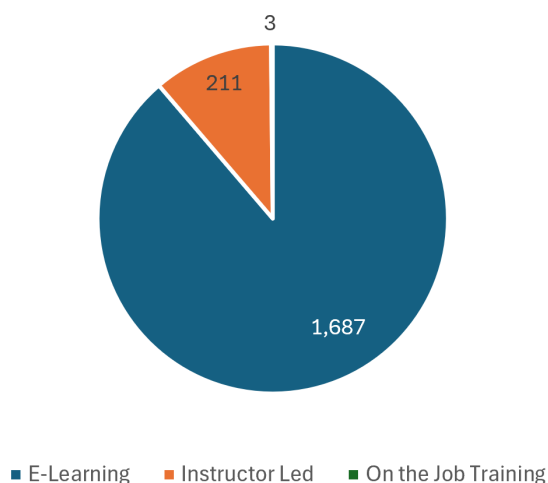


Figure 3.17 INDOT Training Courses on LMS by Method of Delivery.

Additionally, INDOT has about 40 different training vendors such as AASHTO, American Safety Council Inc., Indiana Chapter of the American Concrete, National Safety Council, Trustees of Purdue University. A complete list is provided in Appendix I.

As INDOT's LMS is vital in providing training to its employees, it is important to ensure the LMS is user friendly and advanced to make learning intuitive for the employees.

According to sources (Haan, 2023; Smith, 2024), following are the essential features for an LMS:

- Course Authoring and Customization Tools
- Progress Tracking and Reporting

- Compliance and Certification Management
- Integrations
- Admin Controls
- Analytics
- Robust Security
- Blended Education
- Social Learning
- Gamification

The table below (Table 3.1) provides the best LMS currently in the market along with features of each one of them. This can be used to benchmark against INDOT's LMS.

TABLE 3.1
LMS Benchmarking.

Name	Highlight	Pros	Cons	Reference Link	Popular Companies
CYPHER Learning	Quick start course creation	• Intuitive UX • Little to no technical knowledge to create courses • AI support • Mobile app • Provides certification and licensing • Allows gamification	• Pricing not transparent • Some features not at par with competitors • Limited depth in social learning	https://www.cypherlearning.com/	Microsoft, IBM, Siemens, Hyundai, Wilcon Depot, NTT Data
Talent LMS	Best for small businesses	• Easy to use • Free plan available • Easy third-party integrations • Low setup time (Drag and drop interface) • Supports more languages • Provides certification and licensing • Allows gamification	• Lacks real-time support • No access to library on free plan • Restrictions on file upload size	https://www.talentlms.com/	Google, Meta, Amazon, OpenAI, ebay
Absorb	Best for enterprise businesses	• Ability to support large group of users • Great features (Single sign on, Advanced reporting system, mobile app, integration with other HR systems) • In house customer service team operates 24/7/365	• Search ability	https://www.absorblms.com/	Rakuten
iSpring	Quick Support	• Wide features (Mobile learning, certification, compliance training, integration and customer support) • Great support team	• No free option • No support during the weekends	https://www.ispringsolutions.com	
Docebo	Best for corporations	• More than 400 integrations • Supports more than 40 languages	• Pricing not transparent	https://www.docebo.com	
Coassemble	Best for AI use	• Unlimited AI generated material • Access content without logging in • Easy user interface • Real-time course editing • Provides certification and licensing	• Limited user account on free plan • Minimal compliance tools • Does not allows gamification	https://coassemble.com/	Camplify, Wiise, Volt, ConvertKit, Userlane, Hot Topic
LearnUpon	Best for enterprises	• Support complex training across multiple audiences • Deep integrations with HR, CRM, and webinar tools • Comprehensive reporting, automation and compliance options • Provides certification and licensing • Allows gamification	• Not ideal for users less than 50 • Pricing not transparent • Requires support for initial setup	https://www.learnupon.com/	WebPT, GTreasury, Adecco Group, Gusto, Coupa, The American Council on Exercise

(Continued)

TABLE 3.1
LMS Benchmarking. (Continued)

Name	Highlight	Pros	Cons	Reference Link	Popular Companies
BrainCert	Best for creators	- Built-in virtual classroom and webinar support - Integrated CRM and marketing tools with automation - Provides certification and licensing - Allows gamification	- Limit on time and number of participants on lower plans - Higher tier required for additional features - Overwhelming interface with many tools	https://www.braincert.com/	
Schoox	Best for Frontline Training	- Strong mobile support - AI-powered learning paths - Good mix of readily available and custom content - Provides certification and licensing - Allows gamification	- Pricing not transparent - Unnecessary features that might not be needed by small teams - Overwhelming interface with many tools	https://www.schoox.com/	Sonesta, Phillips 66, Subway, The Cheesecake Factory, Surge Entertainment, Tire Discounters
Anthology	Best for compliance–Heavy industries	- Great for compliance and certification - Integrates with HR systems - Support available in 100+ languages - Provides certification and licensing - Allows gamification	- Pricing is not transparent - Too complex for small businesses - Support needed for integration	https://www.anthology.com/	Xcel Energy, Various Universities
360Learning	Best for peer driven course creation	- Empowers employees to create and share training - Built-in AI allows faster course development - Provides certification and licensing - Allows gamification	- Not suitable for companies that need centralized system - Certain features require assistance from support team	https://360learning.com/	Socotec, Caterpillar, Gardline, Buffalo Grill
CoreAchieve	Best for Visual Reality Training	- Custom VR training scenarios - All features included across all pricing tiers - Provides certification and licensing - Allows gamification with features like badges and discussions	- Changes in plan do not happen in real-time - Can be complex for small teams with basic training needs - Restrictions on branding on lower-tier plans	https://coreachieve.com/	Intel, Toyota, Caterpillar, Safeway

3.6 Summary

- Based on the engagement survey results, employees perceive compensation as the lowest rated while manager and job satisfaction metrics are highly rated.
- The general workforce perceives workforce development as one of the most important aspect of employment and it can influence their decision to leave or join an organization.
- INDOT has several training courses available for employees but they are not easy to find or complete.
- Majority of INDOT training courses are available on LMS through online sources.
- Several neighboring state DOTs are investing heavily in workforce development and making trainings available to employees.

4. TASK B: WORKFORCE OUTLOOK AND TURNOVER REASONS

Studies found that employee turnover has negative impacts on organizational performance (Mohr et al., 2012), loss of institutional knowledge (Metro et al., 2021), and substantial financial burdens (Tatell & Wigert, 2024). Between 2021 and 2023, 2,130 employees left INDOT, including 750 in 2021, 698 in

2022, and 682 in 2023. This represented about 57% cumulative turnover relative to the total workforce of 3,713 employees as of September 3, 2024. Hence, INDOT is experiencing unusually high turnover, indicating urgent need to reduce such high turnover. High employee turnover poses a significant risk to INDOT's performance and cost control. Therefore, we need to understand the root causes of this turnover in order to develop targeted strategies that can mitigate its negative impacts and improve workforce retention.

To investigate the overall INDOT workforce outlook and identify the root cause of workforce turnover, we explored both numerical and textual data including data of current INDOT employees as of 9/3/2024, data of INDOT recruitment, terminations, promotions, and demotions from 2021–2023, demographic data of INDOT terminations from 2021–2023, and exit surveys between July 2022 and June 2024.

- For numerical data, statistical analysis was conducted at both organizational-level in Section 4.1 and individual-level in Section 4.2. At the organizational level, descriptive statistics were used to examine workforce outlook of current INDOT employees as of 9/3/2024 in Section 4.1.1, workforce trends from 2021 to 2023

(e.g., recruitment, terminations, promotions, demotions, etc.) in Section 4.1.2, and turnover across job roles and locations in Section 4.1.3. At the individual level, the analysis focused on the demographic distribution of employees who completed the exit surveys in Section 4.2.1, explored differences in their perceptions of workplace experience across demographic groups in Section 4.2.2, analyzed the main factors for leaving in Section 4.2.3, and did demographic analysis of high-impact factors in Section 4.2.4. To compare the differences among demographic groups in Section 4.2.2, ANOVA was used for comparisons involving more than two groups, while independent t-tests were applied to compare two groups (Kim, 2014). If ANOVA indicated significant differences, the Dunnett T3 post hoc test was used to further identify specific group differences. Dunnett T3 was chosen because it does not assume equal variances or equal sample sizes, making it more suitable for real-world survey data with unbalanced groups (Field, 2024).

- For the textual data in exit surveys, Natural Language Processing (NLP) technique was used to extract key factors from comments of departed employees who answered six open-ended questions first in Section 4.3, and then word clouds were generated to highlight high-frequency key words of different demographic groups in Section 4.4. The use of NLP technique has become an essential tool for analyzing employee feedback and understanding turnover factors. Previous studies illustrate how NLP techniques can transform employee feedback into actionable insights, enabling organizations to address key concerns, improve satisfaction, and reduce turnover (Dreisbach et al., 2019; Ferreira et al., 2019; Kumar et al., 2021; Speer et al., 2023). And the word clouds effectively highlight frequently occurring words, helping users quickly grasp the main themes in a dataset (Heimerl et al., 2014). Given that retention rates vary significantly across race, age, gender, and education level (Schlechter et al., 2016), analyzing demographic groups through word clouds is essential for uncovering group-specific themes.

Below are the main findings of numerical analysis.

- Section 4.1: As of September 2024, INDOT had 3,713 workers, with most being male, full-time, and regular status. Most of the employees were Highway Technicians. From 2021 to 2023, the number of applicants dropped in 2022 and rose in 2023, while hires stayed relatively stable. Total terminations nearly doubled in 2023, with increases in resignations and involuntary terminations. Promotions gradually rose, and demotions remained low. Most turnover involved Highway Technicians and occurred in the LaPorte District. For more detailed discussion, please refer to Section 4.1.
- Section 4.2
 - Section 4.2.1: Exit surveys from 353 former INDOT employees showed most respondents were male and regular workers. The largest age group was 30–39, and Millennials made up the highest responses by generation. Most respondents were white and had a high school education or less. Employees with over 15 years of work experience were the largest tenure group. Turnover was the highest among Highway Technicians, followed by Engineers and Executive/Directors. For more detailed discussion, please refer to Section 4.2.1.
 - Section 4.2.2: Workplace experience ratings at INDOT varied across age, education, ethnicity, gender, employment status, tenure, district, and job role. The 60+ age group consistently reported the most positive experiences, including job satisfaction, culture, communication, management, and compensation. In contrast, the 40–49 age group reported the lowest ratings in

several aspects, particularly feeling valued, recommending to work in INDOT, and satisfaction with pay. No major differences were found across education levels, though those with Associate or Bachelor's degrees gave slightly higher ratings for cultural factors. Ethnicity-based differences were generally limited, though Black employees reported significantly higher satisfaction with workload and resources, while White employees gave lower ratings in feeling valued and recommending INDOT. Male employees rated benefits more positively and scored slightly higher overall, while female employees gave significantly lower ratings for promotion opportunities. Intermittent employees reported higher satisfaction across most aspects except compensation and benefits, where regular employees rated higher. New employees (0–3 months) reported the highest satisfaction, but scores decreased after six months. Employees with 15+ years of work experience showed more positive perceptions on senior leadership' clear vision, competitive pay, and fair pay. District-level differences were limited, with Vincennes reporting higher satisfaction in some aspects. Job role comparisons found interns, seasonal, and rehired employees had the highest satisfaction, while Highway Technicians rated the lowest across most aspects. For more detailed discussion, please refer to Section 4.2.2.

- Sections 4.2.3–4.2.4: The analysis of multiple-choice exit factors shows that Compensation and Personal Reasons were the top reasons that employees left, followed by Growth Opportunities, Senior Leadership, and Communication, while Job Security, Workload, and Schedule were the least impactful. The demographic analysis of the three high-impact exit factors revealed variations across age, district location, ethnicity, highest education level, gender, and tenure groups:
 - Compensation factor was the most frequently cited as the main reason for leaving by any of the following groups, employees aged 40–49 (48%) and 30–39 (30%); employees with 3 to <6 months of tenure (57%); those with master's degree (38%) or technical school background (30%); or employees in the Greenfield (34%), Seymour (30%) districts. Males (29%) cited compensation more often than females (11%). Among ethnic groups, 38% of Black and 25% of White employees identified compensation as the main reason for leaving.
 - Personal Reasons factor was the most cited as the main reason for leaving by any of following groups, employees aged under 30 (24%) and 60+ (26%), employees with 3 to <6 months (36%), 1 to <3 years (30%) of tenure, or employees in Crawfordsville and Greenfield (both 31%). Females (31%) cited this factor as the main reason for leaving more often than males (23%). The factor was similarly cited by Black (26%) and White (24%) employees.
 - Growth Opportunities factor was the most cited main reason for leaving by any of following groups, employees aged 30–39 (18%), under 30 (28%), those with technical education (23%) and associate degrees (17%), employees with 3 to <5 years (21%), 1 to <3 years (20%) of tenure, or employees in the Central Office (19%) and Crawfordsville (17%) district. Females (17%) cited it slightly more than males (13%). The factor was also more influential for Black employees (29%) than White employees (13%).

The main findings from the textual analysis are as follows:

- Section 4.3: This section included the evaluation of responses from Questions 1 through 6 and the NLP-based analysis of

open-ended workforce comments. The textual analysis categorized fourteen themes by frequency across survey questions. The top-impact theme of Immediate Supervisor was the only theme, which was extracted from textual data, appearing in all six questions, showing its strong influence on employee turnover. Mid-impact themes, present in three or four questions, included Job Duties, Culture, Compensation, Senior Leadership, and Growth Opportunities, indicating consistent concerns about role definition, organizational environment, pay, senior management, and advancement opportunities. Low-impact themes, appearing in fewer than three questions, included Resources, Schedule, Workload, Communication, Job Security, Expectations vs. Reality, Personal Reasons, and Emotional Ambivalence, which were cited less often but still indicated specific areas requiring attention.

- Section 4.4: This section used NLP method to analyze open-ended comments by demographic groups (i.e., age, ethnicity, education, gender, and district location), revealing group-specific concerns. Results showed that pay was a common concern across all demographic groups. Younger employees (under 30 and 30–39) emphasized concerns related to supervision, communication, and team; employees aged 40–49 emphasized concerns related to opportunity, organization; and older group (50–59 and 60+) emphasized concerns related to retirement, return and training. Black employees emphasized concerns related to organization, opportunity, training, and diversity, while White employees more frequently emphasized concerns related to supervisor, manager, unit, and work. Educational levels shaped concerns from basic job satisfaction and equipment needs among technical and associate degree holders to leadership and project roles among employees with bachelor's and master's degrees. Male employees emphasized more concerns related to supervisor, equipment, crew, and truck, while female employees mentioned terms such as department, respect, family, and management, showing attention to different aspects of the workplace and culture. District location analysis showed consistent statewide concerns such as pay and position, but also highlighted local issues such as construction, shop, work, crew leadership, retirement planning, and contract assignments.

The recommendations from the numerical analysis are as follows:

- Based on findings from organizational level numerical analysis in Section 4.1, we recommend focusing on retaining Highway Technicians, especially in the LaPorte District where turnover was the highest. INDOT should investigate the sharp rise in resignations and involuntary terminations in 2023 to identify and address potential causes. Strengthening recruitment strategies is also important to maintain a steady applicant pool after the decline in 2022.
- Below are the recommendations based on the findings from individual level numerical analysis in Section 4.2:
 - Age: Interview employees aged 60 and above to understand what contributes to their high satisfaction. Also, interview employees in the 40 to 49 age group to identify reasons for their lower ratings. Use insights from both groups to improve the workplace experience for mid-career employees.
 - Ethnicity: Explore what drives higher satisfaction among Black employees, particularly in workload and resources. Consider applying those practices more broadly. Interview White employees to understand areas where they feel less valued or engaged.

- Gender: Identify factors that contribute to lower satisfaction among female employees, especially in decision-making, promotion opportunities, and benefits. Also, gather input from male employees to explore what contributes to their more positive ratings. Use insights from both groups to design more inclusive and supportive workplace policies.
- Employment Type: Consider enhancing benefit options for intermittent employees. At the same time, explore why regular employees report lower satisfaction with benefits and address those concerns.
- Tenure: Interview employees in their first 0 to 3 months to understand what drives their high satisfaction and also gather input from those who experience a drop after the 6-month period. Use insights from both groups to strengthen onboarding and provide targeted support beyond the initial period.
- Location: Study the practices and management approach in the Vincennes District to understand what contributes to higher satisfaction. Share these practices with other districts to promote consistency and improvement across the state. At the same time, investigate districts such as the Central Office, Crawfordsville, Fort Wayne, and Greenfield, which showed significantly lower ratings in certain aspects, to identify gaps and areas for improvement.
- Job Role: Provide additional support and resources for Highway Technicians, and investigate the specific challenges faced by Executive and Director roles that may explain their low willingness to return.
- Based on the analysis of the thirteen exit factors, several key areas should be addressed to improve employee retention. First, compensation should be strengthened by benchmarking INDOT salaries against peer organizations and implementing regular salary reviews and retention incentives. Second, support for personal needs should be enhanced through resources that help employees manage life challenges and maintain a healthy work-life balance. Finally, growth opportunities should be expanded by establishing clear career paths, mentoring programs, and accessible training to promote long-term professional development.
- To improve retention, INDOT should tailor strategies to key demographic groups by considering factors such as age, gender, tenure, and work location. For example, employees, particularly females, younger and older staff, and those in Greenfield and Crawfordsville, may benefit from enhanced support for work-life balance. Developing targeted strategies based on these demographic insights will help address specific needs of different demographic groups and reduce turnover. More details can be found in Section 4.2.4.

The recommendations from the textual analysis are as follows:

- Below are the recommendations based on findings from textual data analysis in Sections 4.3 and 4.4:
 - Prioritize addressing issues related to High-Impact theme of Immediate Supervisor: INDOT should invest in leadership training, accountability systems, and regular supervisor feedback to strengthen immediate supervisor management. Enhance Mid-Impact themes of Job Duties, Culture, Compensation, Senior Leadership, and Growth Opportunities through clearer roles, improved workplace culture, better compensation, valuing employee feedback, and establishing clear career pathways. Monitor Low-Impact themes of Continue tracking Resources,

Schedule, Workload, and other low-frequency factors to maintain satisfaction and catch emerging issues early.

- INDOT should develop targeted retention strategies that address the unique concerns of different employee demographic groups. For example, younger employees (under 30 and 30–39) frequently emphasized terms such as supervisor, communication, and team, suggesting a need for stronger support systems, mentorship, and collaborative work environments. Details concerning each demographic group can be found in Section 4.4.

4.1 Organizational Level Numerical Analysis

This section presents the numerical analysis at the organizational level from three perspectives. Section 4.1.1 provides demographic analysis based on the data of current INDOT employees as of 9/3/2024, to understand current workforce outlook. Section 4.1.2 shows the trends of INDOT recruitment, terminations, promotions, and demotions from 2021–2023, to identify how workforce activities have changed over time. Section 4.1.3 shows the demographic distributions of INDOT terminations from 2021–2023, to identify which groups were the main turnover groups.

4.1.1 Workforce Outlook (As of 9/3/2024)

As of September 3, 2024, INDOT had 3,713 employees, with 2,882 (78%) males and 831 (22%) females. In terms of employment type, 3,642 (98%) were regular workers and 71 (2%) were intermittent workers. Intermittent workers refer to those who can only work up to 180 days per year. Besides, there were

3,710 (99.9%) full-time workers and 3 (0.1%) part-time workers. Figure 4.1 shows the job distribution at INDOT. The largest group of employees worked as highway technicians, with 1,504 (40.5%) among all employees. This is followed by engineers (560), executive/directors (388), managers (222), equipment mechanics (198), maintenance supervisors (156), project supervisors (129), program coordinators (103), and other job roles, each with fewer than 100 employees.

Figure 4.2 and Figure 4.3 show the age and location distribution of the 3,713 employees. The largest age group was 31–40 years old (859, 23.1%), followed by 51–60 years old (851, 22.9%), 41–50 years old (765, 20.6%), 21–30 years old (636, 17.1%), 61–70 years old (487, 13.1%), etc. The largest group worked at the Central Office with 832 employees (22.4%), followed by Greenfield District (533, 14.4%), LaPorte District (524, 14.1%), Seymour District (473, 12.7%), Fort Wayne District (471, 12.7%), Crawfordsville District (446, 12.0%), and Vincennes District (434, 11.7%).

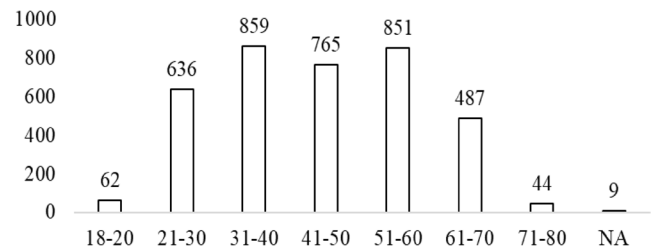


Figure 4.2 Age Distribution of Current Employees as of September 3rd, 2024.

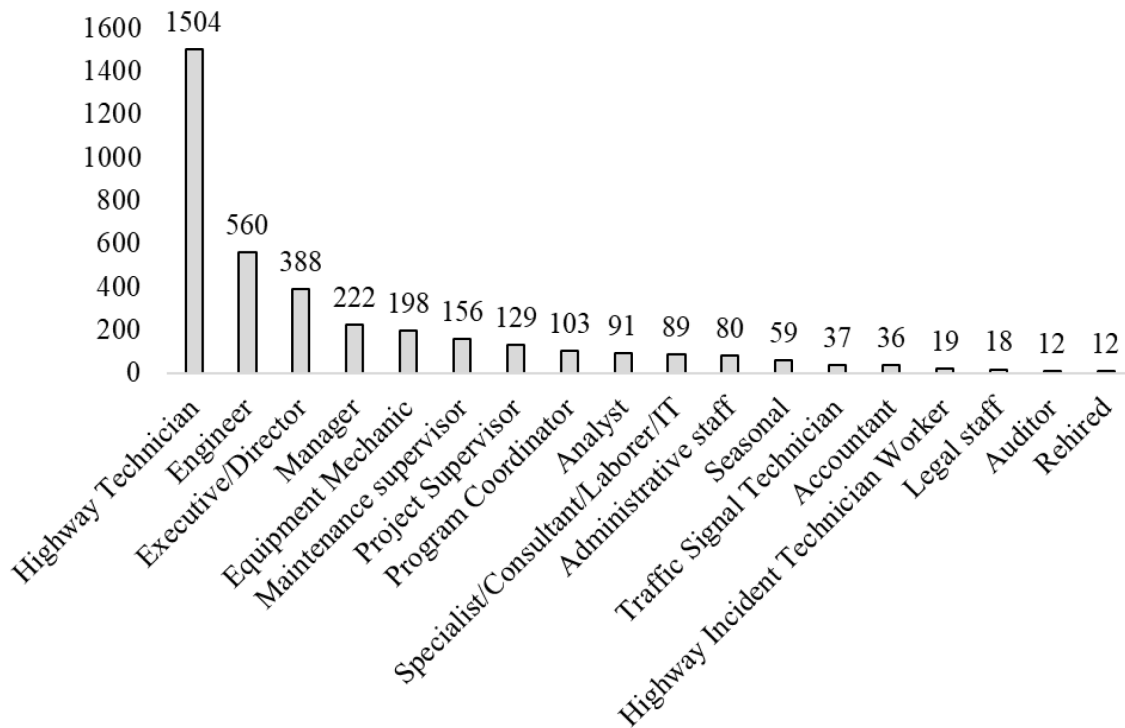


Figure 4.1 Job Distribution of Current Employees as of September 3rd, 2024.

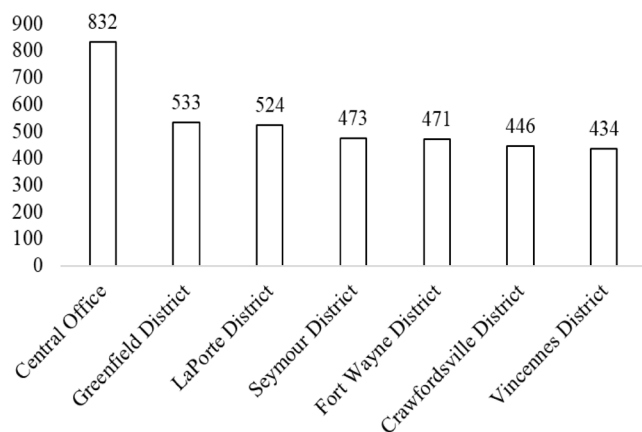


Figure 4.3 Location Distribution of Current Employees as of September 3rd, 2024.

4.1.2 Trends of Recruitment, Termination, Promotion, and Demotion (2021–2023)

Figure 4.4 shows recruitment trends from 2021 to 2023. The number of applicants decreased from 13,122 in 2021 to 11,418 in 2022 and then increased to 16,131 in 2023. The actual number of hires remained relatively stable, ranging from 976 in 2021 to 1,112 in 2022, and slightly decreasing to 1,071 in 2023. The hiring rate (shown by the line graph) started at 7.4% in 2021, increased to 9.7% in 2022, and then decreased to 6.6% in 2023. Figure 4.5 illustrates termination trends by type from 2021 to 2023. All terminations include both resignations and involuntary terminations. The total number of terminations was not same as the sum of resignations and involuntary terminations because the data did not account for individuals who transferred to other state agencies or those who passed away. There was a significant increase in total terminations from 490 in 2021 and 477 in 2022, to 1,013 in 2023. Resignations followed a similar trend, rising from 431 in 2021 and 401 in 2022, to 638 in 2023. Involuntary terminations doubled from 78 in 2021 and 76 in 2022, to 158 in 2023, while retirements remained relatively stable, increasing from 70 to around 90 over the three-year period.

Figure 4.6 shows promotions and demotions trends from 2021 to 2023. Promotions showed a steady increase from 428 in 2021 and 432 in 2022, to 490 in 2023. Regular demotions

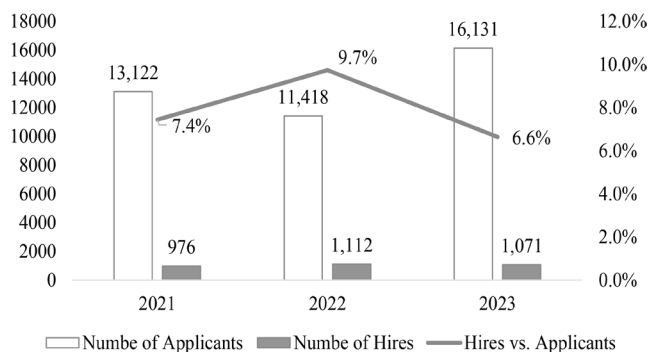


Figure 4.4 Recruitment Trends From 2021 to 2023.

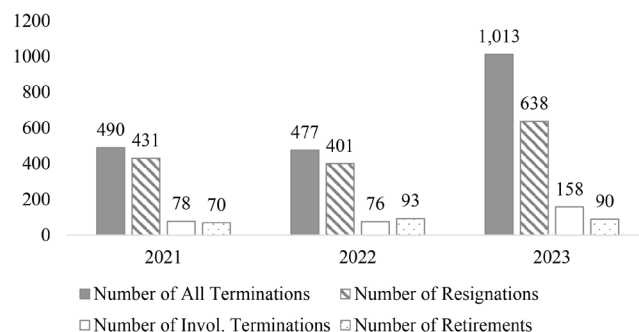


Figure 4.5 Termination Trends by Type From 2021 to 2023.

(Note that All terminations = anyone who has left INDOT/state employment altogether. Involuntary terminations = those whose employment was terminated by the agency, not a resignation or retirement. Resignations = employees who have chosen to resign from their employment with INDOT.)

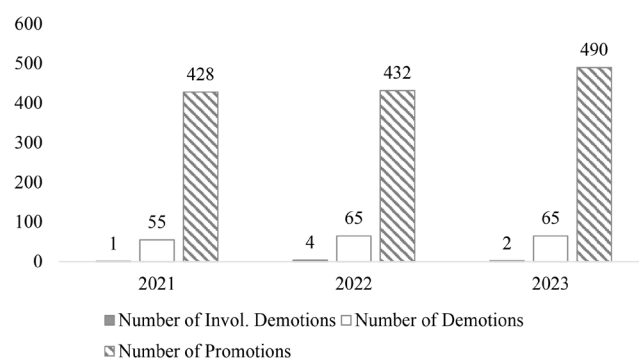


Figure 4.6 Promotions and Demotion Trends From 2021 to 2023.

(shortened to demotions in this report), where employees voluntarily moved into a lower salary grade, remained stable between 55 and 65. In contrast, involuntary demotions were minimal, ranging from 1 to 4 over the three years. The group of demotions does not include the group of involuntary demotions.

4.1.3 Turnover Numbers across Job Roles and Location (2021–2023)

Based on the demographic data of INDOT terminations from 2021–2023, turnover number across job roles and locations are calculated. Figure 4.7 presents the distribution of turnover across job roles, with retirement cases excluded. The largest number of employees among the 2,130 employees who left INDOT were Highway Technicians (n = 1,044), followed by Executive/Director (n = 103) and Equipment Mechanic (n = 83). Engineer (n = 51), Maintenance Supervisor (n = 44), Project Supervisor (n = 43), Administrative Staff (n = 42), and Engineering Assistant (n = 38) followed in order. Other roles included Environmental Manager (n = 34), Program Coordinator (n = 32), and Construction Engineer (n = 30). Additional job roles with fewer than 30 employees who left included Analyst, Project Manager, Traffic Signal Technician, Accountant, Consultant, Auditor, Highway Incident Technician Worker, Others, Rehired, District Operations Manager, Geologist, and Attorney.

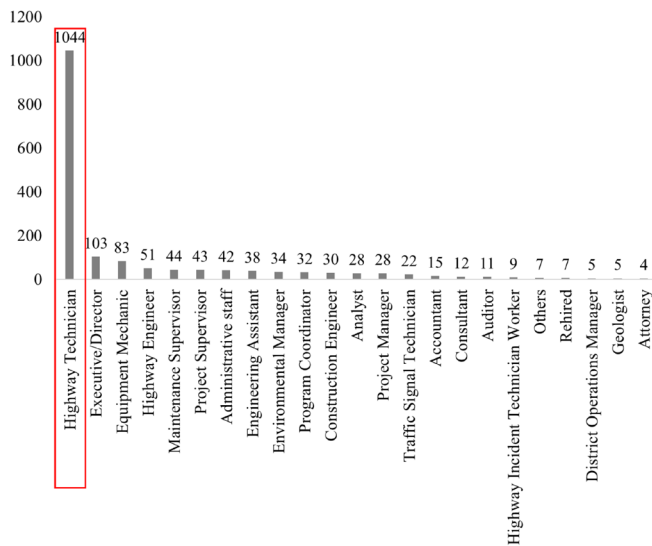


Figure 4.7 Turnover Distribution Across Job Roles Based on Overall Termination Data.
(Note: Retirement data is removed)

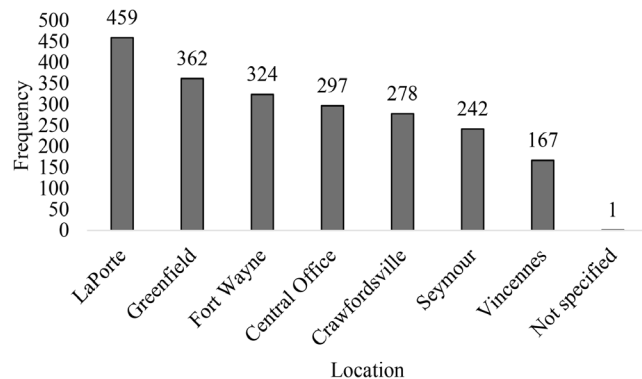


Figure 4.8 Turnover Rates Across Locations Based on Overall Termination Data.
(Note: Retirement data is removed)

Figure 4.8 shows the distribution of workers who left INDOT by location. The LaPorte District reported the highest number ($n = 459$), followed by Greenfield ($n = 362$), Fort Wayne ($n = 324$), and the Central Office ($n = 297$). Crawfordsville ($n = 278$), Seymour ($n = 242$), and Vincennes District ($n = 167$) were next, while one employee who left did not specify where they worked.

4.2 Individual Level Numerical Analysis

This section presents the numerical analysis at the individual level based on 353 responses from exit surveys, including one response from who was on long term disability (see the definition in Appendix B). Section 4.2.1 shows the demographic distributions of the employees who left INDOT and responded to the exit surveys, to identify which demographic groups had higher turnover rates. Section 4.2.2 provides the differences in workplace experience among various demographic groups, to

understand how different groups perceive their workplace experience. Section 4.2.3 shows the exit factors why employees left INDOT, to identify the main reasons for turnover. Section 4.2.4 shows the analysis of high-impact exit factors by demographic groups to identify group-specific reasons for leaving.

4.2.1 Individual Demographics

Data from exit surveys were provided by INDOT, which collected the demographics of 353 employees who left between July 2022 and June 2024, their work information, and perceived workplace experience in nine factors (e.g., culture and job satisfaction). Demographic information consists of age, ethnicity, generation, education, gender, employment type (regular or intermittent), tenure, the locations where employees worked, and job roles.

A total of 353 responses were obtained from the exit survey, with 282 employees (80%) male and 70 (20%) female. In addition, 339 (96%) were regular workers and 14 (4%) were intermittent workers. Figure 4.9 presents the age distribution of former INDOT employees. The largest proportion was in the 30–39 age group (27%), followed by the 18–29 group (21%) and those aged 60 and over (20%). Employees aged 40–49 and 50–59 accounted for 16% and 15%, respectively. Figure 4.10 shows the turnover rates by generations. Millennials (1980–1996) accounted for 37% (130 individuals), followed by Baby Boomers (1946–1964) at 24% (83 individuals), Gen X (1965–1979) at 23% (82 individuals), and Gen Z (1997–2012) at 16% (58 individuals).

Figure 4.11 to Figure 4.14 illustrate the turnover rates by ethnicity, education, tenure, and job roles, respectively. Figure 4.11 shows that white employees represented 84% (96 individuals), while Black employees accounted for 8% (27 individuals). Other ethnicities, including Native American, Asian, Hispanic/Latino,

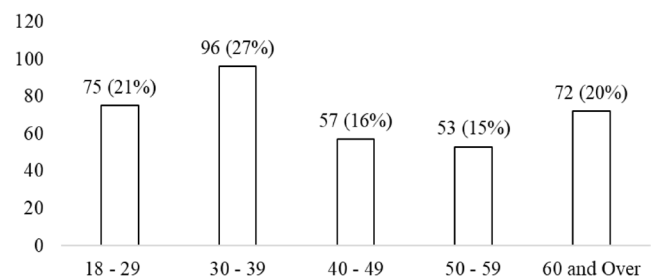


Figure 4.9 Turnover Rates by Age Groups.

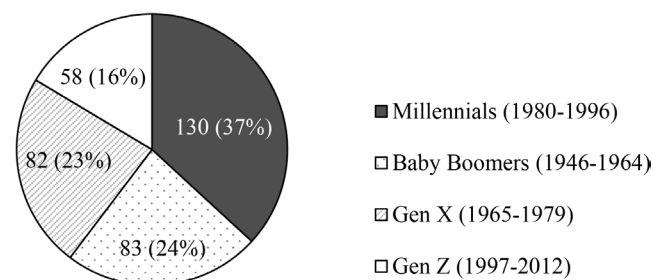


Figure 4.10 Turnover Rates by Generations.

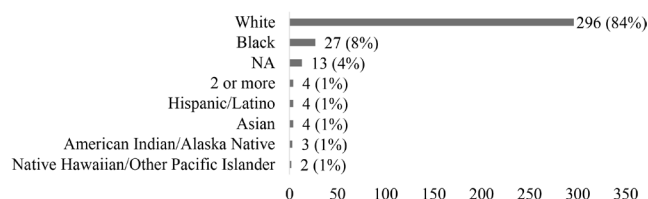


Figure 4.11 Turnover Rates by Ethnicity.

(Note that 2 or more = employees with two or more ethnicities.)

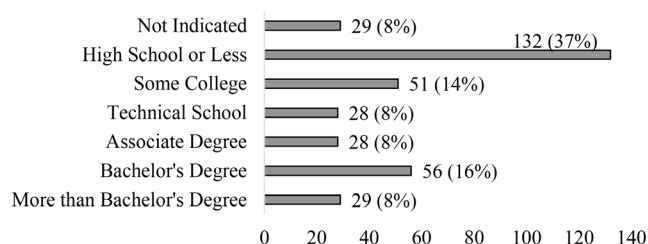


Figure 4.12 Turnover Rates by Education.

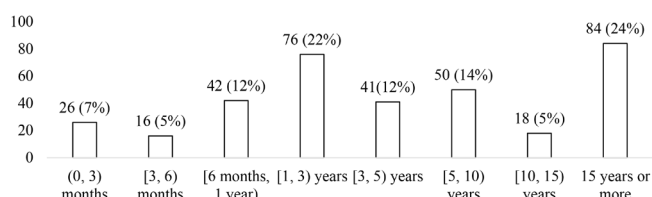


Figure 4.13 Turnover Rates by Tenure.

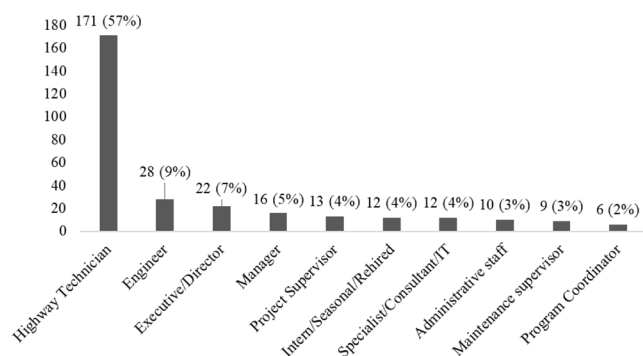


Figure 4.14 Turnover Rates by Job Roles.

(Note: Specialist/Consultant/IT include the following job roles: Developmental Specialist, Surveyor, Safety Training Consultant, Accountant, Audit Examiner, IT such as Bus Intel Dev Int, and Field Auditor)

and Pacific Islander, collectively accounted for 4% (13 individuals). Figure 4.12 shows that individuals with high school education or less accounted for 37% (132 individuals), while 16% (56 individuals) had a bachelor's degree. Individuals with other educational levels, including some college, technical school, associate degrees, and education beyond a bachelor's degree, ranged from 8% to 14%. As shown in Figure 4.13, employees with 15+ years of service made up the largest group (84, 24%), followed by those with 1–3 years (76, 22%), 5–10 years (50, 14%), 6 months–1 year (42, 12%), 3–5 years (41, 12%),

0–3 months (26, 7%), 3–6 months (16, 5%), and 10–15 years (18, 5%). Figure 4.14 shows that turnover was the highest among Highway Technicians (57%), followed by Engineers (9%), Executive/Directors (7%), and Managers (5%), with all other roles each accounting for 4% or less.

4.2.2 Individual Difference in Workplace Experience

The exit surveys evaluated 37 key aspects under nine (9) factors on perceived workplace experience as summarized in Table A-1 in the Appendix A. Each aspect was rated by the five-point Likert scale, with 0 indicating strongly disagree and 5 indicating strongly agree. ANOVA and Dunnett T3 post hoc test ($p < 0.05$) were conducted to compare workplace experience among employees with nine demographic characteristics, including age, generation, gender, ethnicity, education, tenure, employment type, location, and job roles. All statistically significant differences from the Dunnett T3 test are presented in the figures, with p-values shown for each pairwise comparison.

4.2.2.1 Culture (Five Key Aspects). There are five key aspects to evaluating workplace culture, including perceived fairness, good teamwork, feeling valued, recommend working here, and ideas were heard. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following text of this task.

Figure 4.15 examined five key aspects of workplace culture across five age groups (18–29, 30–39, 40–49, 50–59, and 60 and over). “Good teamwork” received the highest overall ratings with scores ranging from 3.65 to 4.19, showing strong team collaboration across all age groups. The 60 and over age group consistently reported the highest satisfaction levels across all aspects. Perceived fairness had moderate ratings ranging from 3.40 to 3.99, again with 60+ employees rating it the highest. Feeling valued showed statistically significant differences between the 40–49 and 60+ age groups (2.68 vs. 3.74, $p < 0.001$). Recommending the workplace showed significant difference ($p = 0.003$), between the 40–49 age group (2.86) and the 60+ group (3.76). “Ideas were heard” showed significant differences between age groups (30–49 vs. 60+), with ratings ranging from 2.92 to 3.78. The analysis reveals a consistent pattern where the 60 and over age group reported the most positive turnover intentions, while the 40–49 age group consistently provided the lowest ratings across all aspects. This pattern was particularly significant when rating feeling valued, workplace recommendation, and ideas were heard.

Figure 4.16 shows the average ratings of workplace culture across four generations: Baby Boomers (1946–1964), Gen X (1965–1979), Millennials (1980–1996), and Gen Z (1997–2012). The statistically significant differences between some groups are also highlighted in Figure 4.16. The data showed that Baby Boomers consistently rated their turnover intentions more positively than other generations. This difference was particularly significant in feeling valued, Baby Boomers (3.61) reported significantly more positive experiences compared to both Gen X and Millennials (both at 3.02). The consideration of ideas also showed significant generational differences

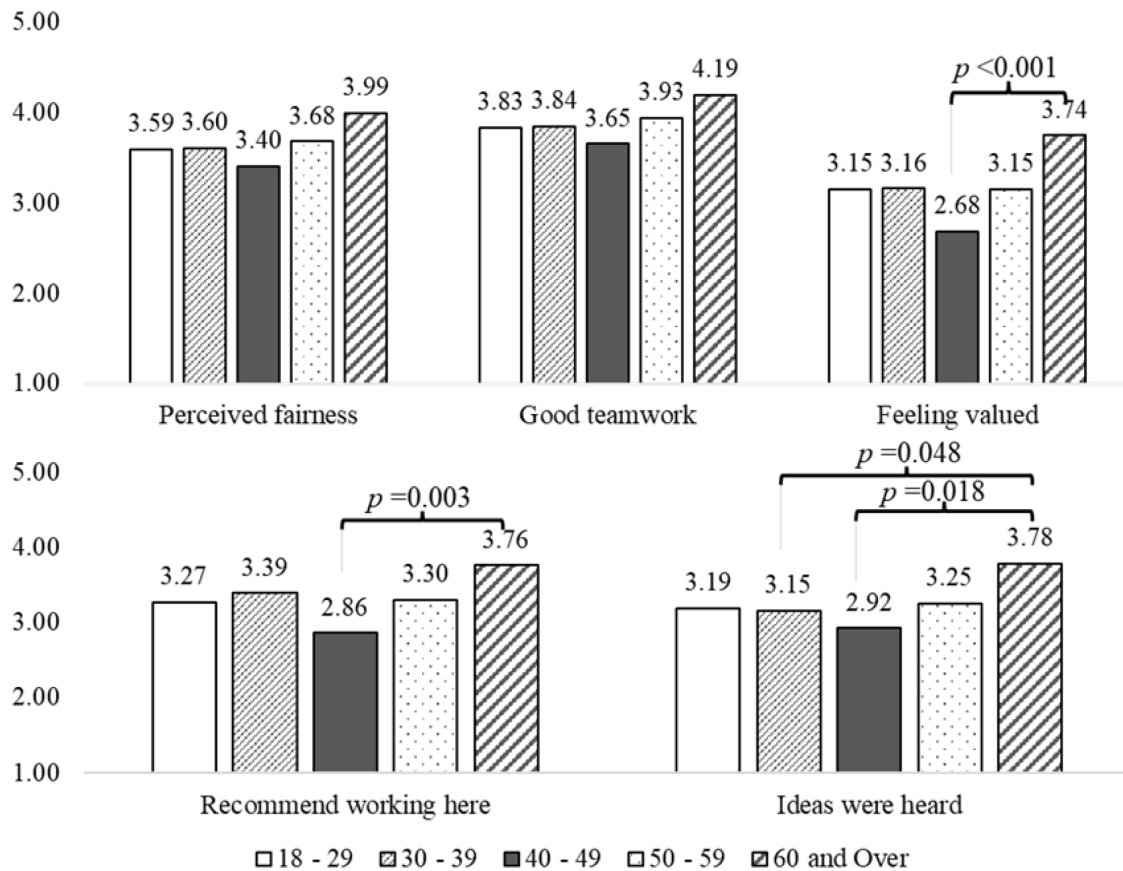


Figure 4.15 Culture Difference by Age.

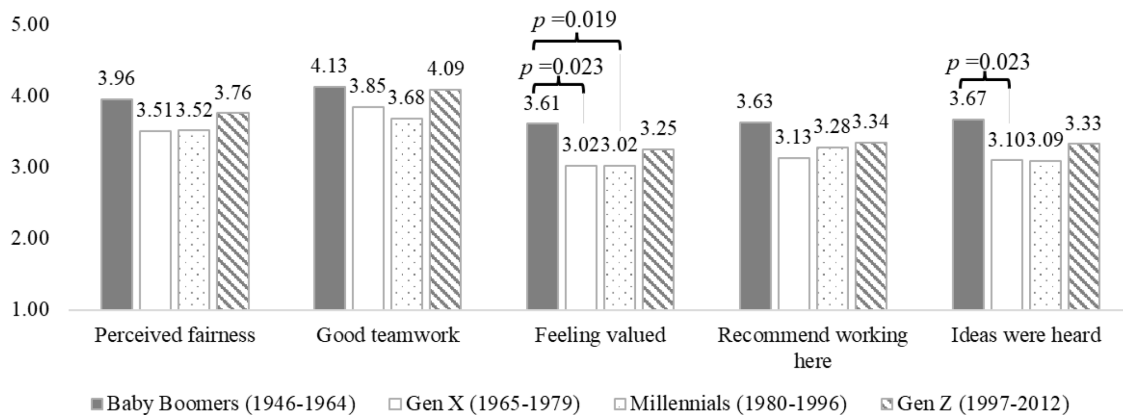


Figure 4.16 Culture Difference by Generation.

($p = 0.023$), with Baby Boomers feeling their ideas were better heard (3.67) compared to Gen X (3.10). Interestingly, Gen Z showed slightly higher ratings than Gen X and Millennials in all key aspects, particularly in good teamwork (4.09) and feeling valued (3.25), suggesting a possible U-shaped pattern where both the oldest and youngest generations reported more positive experiences than middle generations. While perceived fairness, good teamwork, and workplace recommendation showed

similar patterns with Baby Boomers rating the highest, the differences between generations were not statistically significant for these key aspects, indicating more consistent experiences across age groups in these aspects of workplace culture.

Figure 4.17 and Figure 4.18 show the average ratings of workplace culture among gender and ethnic groups, respectively. Figure 4.17 shows that male employees showed slightly higher ratings than female employees in three key aspects

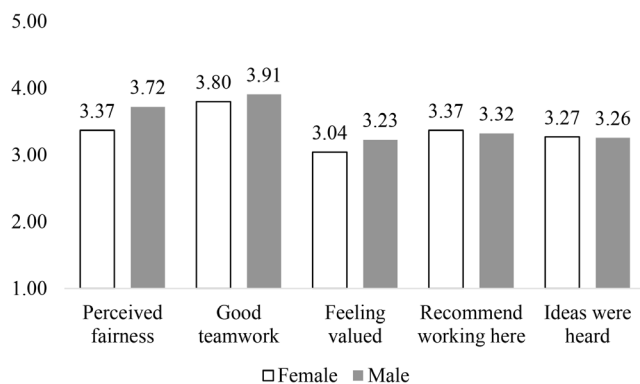


Figure 4.17 Culture Difference by Gender.



Figure 4.18 Culture Difference by Ethnicity.

(perceived fairness: males 3.72 vs. females 3.37; good teamwork: males 3.91 vs. females 3.80; feeling valued: males 3.23 vs. females 3.04). Figure 4.18 shows that black employees gave somewhat higher ratings when asked if “their team worked well together” (4.09) and if they “would recommend the organization as a good place to work” (3.81). Other ethnicity groups (such as Native American, Asian, Hispanic/Latino, and Pacific Islander) rated slightly higher on whether “employees were treated fairly regardless of their race, gender, age, sexual orientation, etc.” (3.93) and whether their “ideas and suggestions were given consideration” (3.62). White employees tended to give relatively lower ratings, particularly when asked if they “felt valued as an employee” (3.13) and if they “would recommend the organization as a good place to work” (3.28). However, it’s important to note that none of these differences within gender and ethnic groups were statistically significant, suggesting similar workplace experiences across all gender and ethnic groups.

Table 4.1 presents the average ratings of workplace culture across education levels, with no statistically significant differences found. When asked if “employees were treated fairly regardless of their race, gender, age, sexual orientation, etc.,” those with Associate and Bachelor’s degrees gave the highest ratings (both 4.0), while Technical School graduates rated it the lowest (3.2). Regarding whether “my team worked well together,” Associate Degree groups and Not Indicated reported the highest scores (both 4.1), with Some College and Technical School reporting lower scores (both 3.7). When responding to “I felt valued as an employee,” Bachelor’s degree holders gave the

TABLE 4.1
Culture Difference by Education.

Education Group	Key Aspects				
	Perceived Fairness	Good Teamwork	Feeling Valued	Recommend Working Here	Ideas Were Heard
Not Indicated	3.8	4.1	3.4	3.4	3.4
High School or Less	3.5	3.9	3.1	3.2	3.2
Some College	3.7	3.7	3.1	3.2	3.1
Technical School	3.2	3.7	2.6	3.0	2.8
Associate Degree	4.0	4.1	3.3	3.5	3.4
Bachelor’s Degree	4.0	4.0	3.5	3.7	3.5
More than Bachelor’s Degree	3.8	4.0	3.4	3.5	3.6

highest rating (3.5), while Technical School graduates reported the lowest (2.6). For the question “I would recommend the organization as a good place to work,” Bachelor’s degree holders rated highest (3.7), with Technical School graduates rating the lowest (3.0). When asked if “my ideas and suggestions were given consideration,” those with More than Bachelor’s Degree gave the highest rating (3.6), while Technical School graduates gave the lowest (2.8).

Figure 4.19 shows the average rating of all the five key aspects across eight tenure groups, with highlighted significant differences between some groups. Particularly, newer employees (0–3 months) showed higher satisfaction compared to longer-tenured employees. When asked if “employees were treated fairly regardless of their race, gender, age, sexual orientation, etc.,” new employees (0–3 months) reported significantly higher ratings (4.64, $p < 0.001$) compared to several tenure groups: 3–6 months (4.13), 6 months–1 year (3.10), 1–3 years (3.39), 3–5 years (3.54), 5–10 years (3.56), and more than 15 years (3.80). Regarding whether “my team worked well together,” new employees again rated this highest (4.54), showing significant differences compared to those with 6 months–1 year tenure (3.64, $p = 0.017$) and 3–5 years tenure (3.56, $p = 0.023$). For “I felt valued as an employee,” the newest employees (4.27) reported significantly higher ratings compared to more than 15 years tenure group and all other tenure groups up to 10 years except 3–6 months. When asked if they “would recommend the organization as a good place to work,” new employees (4.15) showed significantly higher ratings compared to several tenure groups ($p = 0.024$ to 0.031). For whether “my ideas and suggestions were given consideration,” while new employees rated this highest (3.69), the differences were not statistically significant across tenure groups. Results suggest that there is a consistent significant decline in workplace satisfaction on culture aspects after the initial six months of employment.

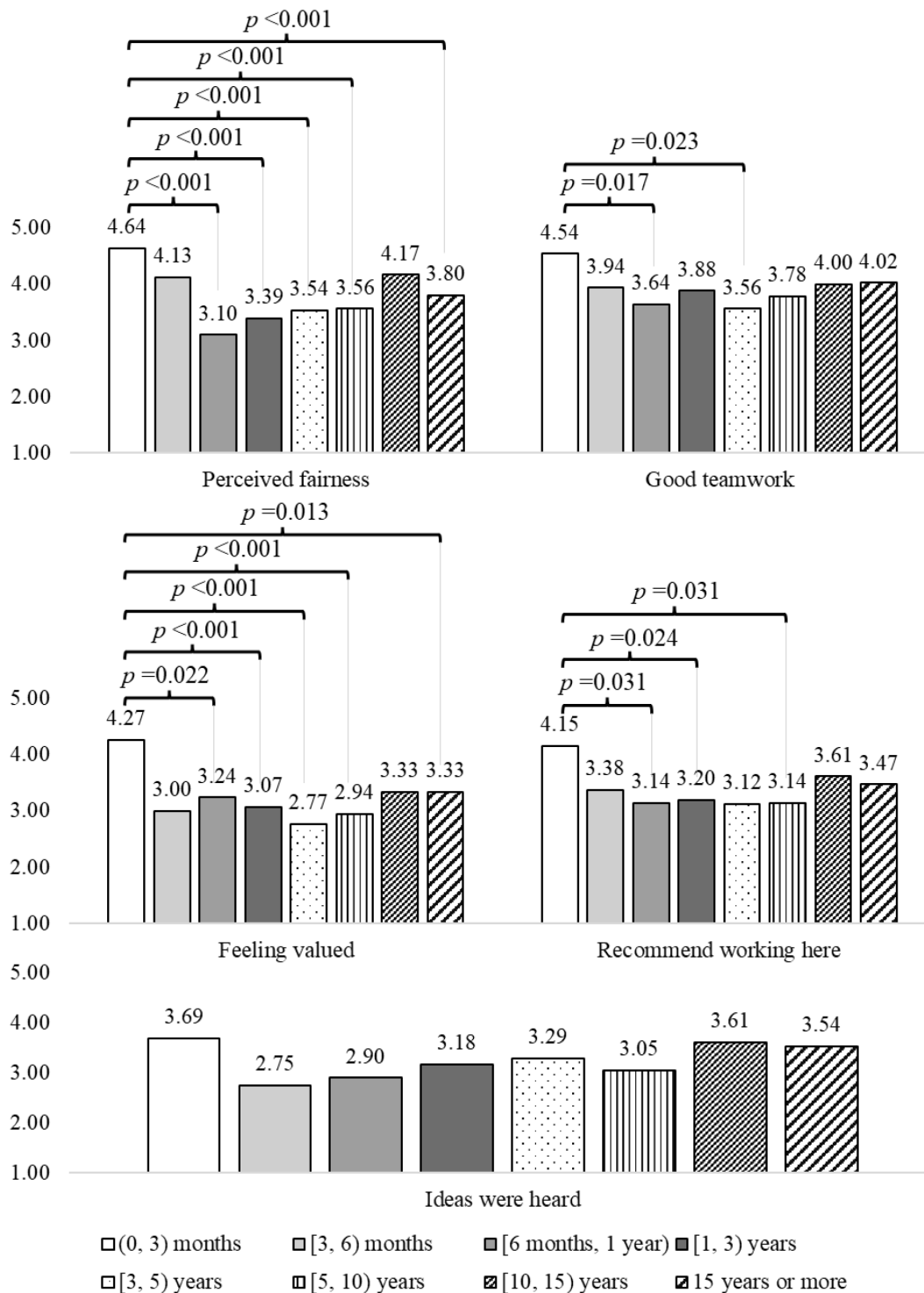


Figure 4.19 Culture Difference by Tenure.

Figure 4.20 shows the average ratings of workplace culture and highlights significant differences between intermittent and regular employees across four key aspects, with intermittent employees consistently reporting higher satisfaction. When asked if “employees were treated fairly regardless of their race, gender, age, sexual orientation, etc.,” intermittent employees rated significantly

higher (4.92) than regular employees (3.61, $p < 0.001$). Similarly, for whether “my team worked well together,” intermittent employees gave the highest possible rating (5.00) compared to regular employees (3.85, $p < 0.001$). Regarding whether they “felt valued as an employee,” intermittent workers reported significantly higher ratings (4.50) compared to regular employees (3.14, $p = 0.005$).

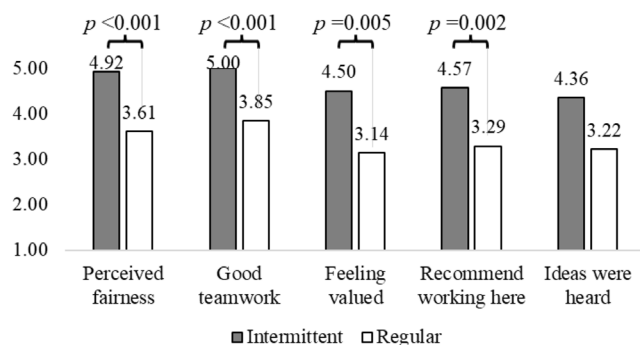


Figure 4.20 Culture Difference by Employment Type.

When asked if they “would recommend the organization as a good place to work,” intermittent employees again rated significantly higher (4.57) than regular employees (3.29, $p = 0.002$). For whether “my ideas and suggestions were given consideration,” intermittent employees rated this higher (4.36) than regular employees (3.22), though this difference was not statistically significant. These findings consistently show that intermittent employees had more positive workplace experiences across all measured aspects compared to regular employees, with significant differences in four out of five key aspects.

Figure 4.21 presents significant differences only in good teamwork across most districts, while other key aspects showed

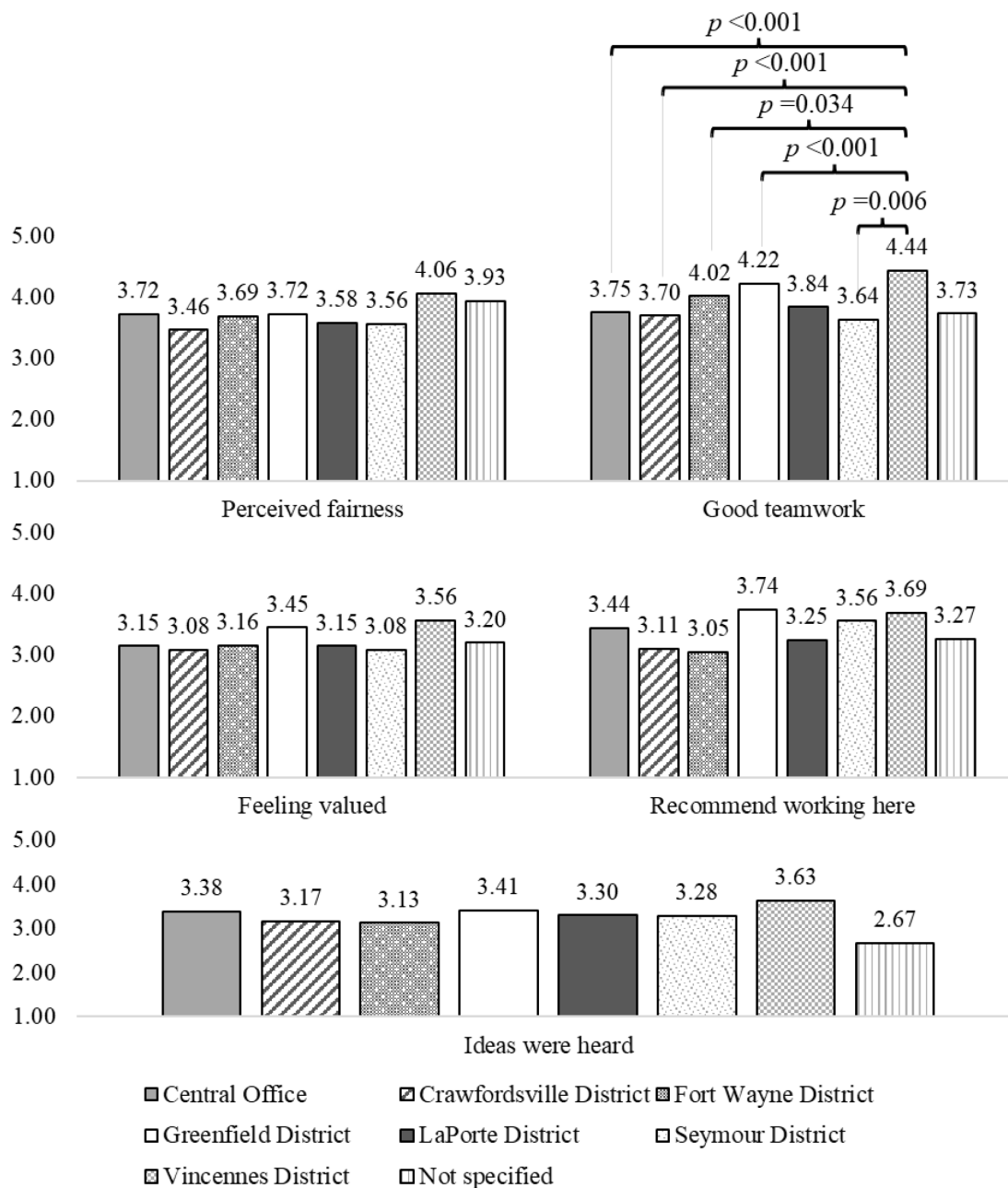


Figure 4.21 Culture Difference by Location.

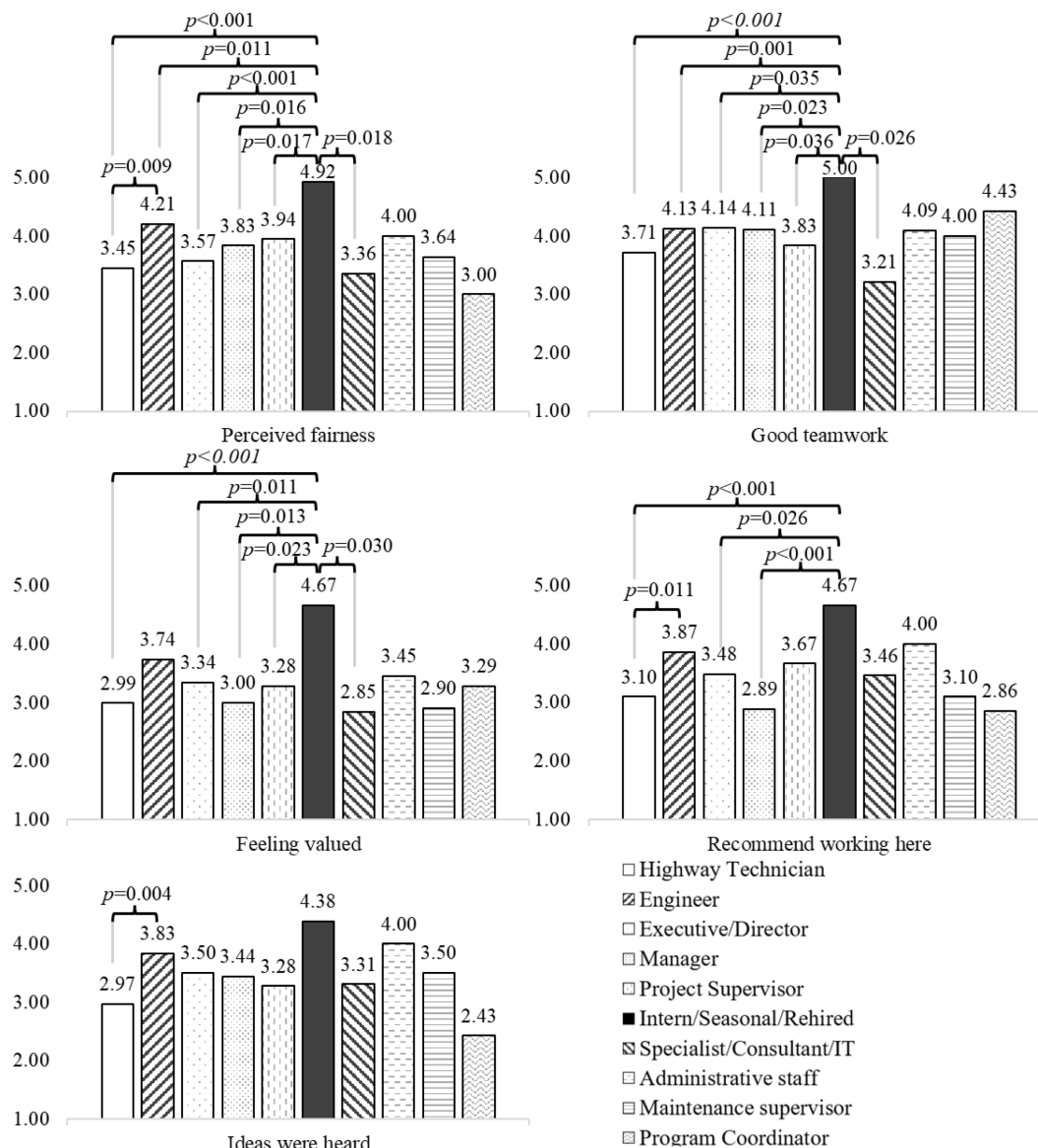


Figure 4.22 Culture Difference by Job Roles.

no significant differences. When asked if “employees were treated fairly regardless of their race, gender, age, sexual orientation, etc.,” ratings were relatively consistent across locations, ranging from 3.46 (Crawfordsville District) to 4.06 (Vincennes District), with no statistically significant differences. Regarding whether “my team worked well together,” significant differences emerged across several locations. Vincennes District reported the highest rating (4.44), showing significant differences compared to Seymour District (3.64, $p = 0.006$), Greenfield District (4.22, $p < 0.001$), Fort Wayne District (4.02, $p = 0.034$), Crawfordsville District (3.70, $p < 0.001$), and Central Office (3.75, $p < 0.001$). For “I felt valued as an employee,” ratings ranged from 3.08 (Crawfordsville and Seymour Districts) to 3.56 (Vincennes District), with no statistically significant differences. Similarly, when asked if they “would recommend the organization as a good place to work” and whether their “ideas

and suggestions were given consideration,” ratings varied across locations but showed no significant differences. The data suggests that while perceptions of teamwork varied significantly by location, other aspects of workplace culture were relatively consistent across different districts.

Figure 4.22 shows the average ratings of workplace culture and highlights the significant differences across some job roles. First, Intern/Seasonal/Rehired employees reported the highest ratings across all aspects (4.92 for perceived fairness, 5.00 for good teamwork, 4.67 for feeling valued, 4.67 for recommend working here, and 4.38 for ideas were heard), scoring significantly higher than Highway Technicians across four of the five aspects (all except ideas were heard). They also scored significantly higher than Engineers for perceived fairness and good teamwork, Executive/Directors for perceived fairness, good teamwork, feeling valued, and recommend working here,

Managers across all four measured aspects, Project Supervisors for perceived fairness, good teamwork, and feeling valued, and Specialist/Consultant/IT for perceived fairness, good teamwork, and feeling valued. Second, Engineers scored significantly higher than Highway Technicians for perceived fairness (4.21 vs. 3.45, $p = 0.009$), recommend working here (4.13 vs. 3.10, $p = 0.011$), and ideas were heard (3.83 vs. 2.97, $p = 0.004$). Third, Highway Technicians consistently reported among the lowest scores across culture aspects, with particularly low ratings for feeling valued (2.99) and recommend working here (3.10). Overall, the Intern/Seasonal/Rehired employees had the most positive workplace culture across all aspects, while Highway Technicians reported the most negative culture-related experiences.

4.2.2.2 Job Satisfaction (Seven Key Aspects). There are seven key aspects to evaluating workplace job satisfaction, including enjoyed work, training was enough, freedom of making decisions, organization support in work/life balance, reasonable workload, had the resources workers needed, and job met workers expectations. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.1 shows the average ratings of job satisfaction and significant differences across some age groups, consistently showing highest satisfaction among employees aged 60 and over. When asked if they “liked the type of work they did,” employees aged 60 and over reported significantly higher ratings (4.46) compared to those aged 18–29 years (3.99, $p = 0.014$). Regarding whether they “received adequate training to be successful at their job,” the 60 and over age group again rated the highest (3.93), showing significant differences from both the 30–39 age group (3.38, $p = 0.027$) and the 40–49 age group (3.15, $p = 0.007$). For having “enough freedom in making decisions to do their job effectively,” those aged 60 and over rated this highest (4.04), significantly higher than those aged 30–39 (3.39, $p = 0.008$). When asked if “the amount of work they were expected to do was reasonable,” the 60 and over group (4.15) rated this significantly higher than the 50–59 age group (3.68, $p = 0.049$). Regarding whether “the reality of their job matched the expectations they had when hired,” the 60 and over group (4.03) reported significantly higher ratings compared to both the 30–39 age group (3.58, $p < 0.001$) and the 40–49 age group (3.13, $p = 0.002$). For questions about whether “the organization supported them in maintaining a work/life balance” and if they “had the resources and equipment needed to be successful,” ratings varied across age groups but showed no statistically significant differences. Overall, the 60 and over age group consistently had the highest satisfaction levels, while 30–49 age groups, had lower satisfaction.

Figure C.2 shows the average ratings of job satisfaction and highlights significant differences in three key aspects between some generation groups, with Baby Boomers (1946–1964) generally reporting higher satisfaction levels. When asked if they “liked the type of work they did,” Baby Boomers rated significantly higher (4.39) compared to Gen Z (3.86, $p = 0.009$). Similarly, for having “enough freedom in making decisions

to do their job effectively,” Baby Boomers reported significantly higher ratings (3.96) than Millennials (3.44, $p = 0.016$). Regarding whether “the reality of their job matched the expectations they had when hired,” Baby Boomers (3.82) rated significantly higher than Gen X (3.27, $p = 0.021$). For whether they “received adequate training to be successful at their job,” while Baby Boomers rated the highest (3.76) compared to other generations (Gen X: 3.37, Millennials: 3.33, Gen Z: 3.64), these differences were not statistically significant. For questions about whether “the organization supported them in maintaining a work/life balance” (Baby Boomers: 3.82, Gen X: 3.65, Millennials: 3.77, Gen Z: 3.74), “the amount of work they were expected to do was reasonable” (Baby Boomers: 4.00, Gen X: 3.85, Millennials: 3.73, Gen Z: 4.00), and if they “had the resources and equipment needed to be successful” (Baby Boomers: 3.57, Gen X: 3.44, Millennials: 3.34, Gen Z: 3.33), ratings varied across generations but showed no statistically significant differences. Overall, Baby Boomers generally had the highest satisfaction levels, particularly in aspects of work enjoyment, decision-making freedom, and job expectations.

Figure C.3 shows the average ratings of job satisfaction and minimal differences between male and female employees, with only one statistical significance found in freedom of making decisions. For having “enough freedom in making decisions to do their job effectively,” male employees rated slightly higher (3.61) than female employees (3.57), with this small difference being statistically significant ($p = 0.048$). In other aspects, ratings were similar between genders. When asked if they “liked the type of work they did,” both groups reported high satisfaction (females: 4.29, males: 4.18). Regarding whether they “received adequate training to be successful at their job,” ratings were comparable (females: 3.54, males: 3.47). For whether “the organization supported them in maintaining a work/life balance” (females: 3.69, males: 3.76), “the amount of work they were expected to do was reasonable” (females: 3.69, males: 3.90), and whether they “had the resources and equipment needed to be successful” (females: 3.57, males: 3.37), differences were minimal and not statistically significant. Similarly, when asked if “the reality of their job matched the expectations they had when hired,” both groups reported comparable ratings (females: 3.49, males: 3.55).

Figure C.4 presents the average ratings of job satisfaction and some significant differences between certain ethnic groups, with Black employees generally reporting higher satisfaction in five key aspects. When asked if “the amount of work they were expected to do was reasonable,” Black employees rated significantly higher (4.22) than White employees (3.82, $p = 0.046$). Similarly, regarding whether they “had the resources and equipment needed to be successful,” Black employees reported significantly higher ratings (3.93) compared to White employees (3.34, $p = 0.005$). For other aspects, variations existed but were not statistically significant. When asked if they “liked the type of work they did,” all groups reported relatively high satisfaction (White: 4.22, Black: 4.15, Others: 4.03). Regarding whether they “received adequate training to be successful at their job,” ratings were comparable (White: 3.45, Black: 3.67, Others: 3.70). For whether they “had enough freedom in making decisions

to do their job effectively” (White: 3.58, Black: 3.89, Others: 3.67), “the organization supported them in maintaining a work/life balance” (White: 3.70, Black: 4.04, Others: 3.90), and if “the reality of their job matched the expectations they had when hired” (White: 3.52, Black: 3.72, Others: 3.62), differences were not statistically significant. The analysis reveals that while Black employees reported significantly higher satisfaction in workload and resources, most other aspects of job satisfaction were relatively similar across ethnic groups.

Table C.1 shows no statistically significant differences across education levels in job satisfaction aspects. When employees were asked if they “liked the type of work they did,” ratings were consistently high across all education levels, ranging from 4.0 (More than Bachelor’s Degree) to 4.3 (Not Indicated and High School or Less). For whether they “received adequate training to be successful at their job,” ratings ranged from 3.1 (Some College) to 3.9 (Not Indicated). Regarding whether they “had enough freedom in making decisions to do their job effectively,” ratings varied from 3.4 (Technical School) to 3.9 (Not Indicated and More than Bachelor’s Degree). When asked if “the organization supported them in maintaining a work/life balance,” responses ranged from 3.4 (Technical School) to 4.0 (More than Bachelor’s Degree). For whether “the amount of work they were expected to do was reasonable,” ratings were consistent across groups (3.7–3.9). When asked if they “had the resources and equipment needed to be successful,” ratings ranged from 3.1 (Technical School) to 3.9 (More than Bachelor’s Degree). Regarding whether “the reality of their job matched the expectations they had when hired,” ratings varied from 3.1 (Technical School) to 3.7 (Bachelor’s Degree).

Figure C.5 shows the average ratings of job satisfaction and significant differences in four aspects between certain tenure groups, with newer employees (0–3 months) consistently reporting higher satisfaction levels. Regarding whether “the organization supported them in maintaining a work/life balance,” new employees (4.44) showed significantly higher ratings compared to several groups: 1–3 years (3.66, $p = 0.013$), 3–5 years (3.52, $p = 0.047$), 5–10 years (3.50, $p = 0.006$), and 15 years or more (3.82, $p = 0.047$). For “the amount of work they were expected to be reasonable,” the newest employees (4.54) reported significantly higher ratings compared to multiple tenure groups: 1–3 years (3.80, $p = 0.004$), 3–5 years (3.70, $p = 0.019$), 5–10 years (3.61, $p < 0.001$), and 15 years or more (3.90, $p = 0.010$). When asked if they “had the resources and equipment needed to be successful,” new employees (0–3 months) reported significantly higher ratings (4.31) compared to multiple tenure groups: 6 months–1 year (3.30, $p = 0.002$), 1–3 years (3.16, $p < 0.001$), 3–5 years (3.29, $p = 0.004$), 5–10 years (3.10, $p < 0.001$), and 15 years or more (3.61, $p = 0.003$). When asked if “the reality of their job matched the expectations they had when hired,” new employees (4.15) rated significantly higher than those with 1–3 years of tenure (3.32, $p = 0.043$). A consistent pattern emerged where employees with 0–3 months tenure reported the highest satisfaction levels across all aspects, and significantly higher satisfaction in four aspects compared to those with 1–10 years of experience and more than 15 years of experience.

Figure C.6 shows the average ratings of job satisfaction and consistent differences between intermittent and regular employees across five job satisfaction aspects, with intermittent employees reporting significantly higher satisfaction levels. When asked if they “received adequate training to be successful at their job,” intermittent employees rated significantly higher (4.57) than regular employees (3.45, $p = 0.004$). For having “enough freedom in making decisions to do their job effectively,” intermittent employees reported significantly higher ratings (4.64) compared to regular employees (3.57, $p = 0.001$). Regarding whether “the organization supported them in maintaining a work/life balance,” intermittent workers rated significantly higher (4.86) than regular employees (3.70, $p < 0.001$). When asked if “the amount of work they were expected to do was reasonable,” intermittent employees again rated significantly higher (4.68) than regular employees (3.83, $p = 0.033$). For whether they “had the resources and equipment needed to be successful,” intermittent employees reported significantly higher ratings (4.57) compared to regular employees (3.37, $p = 0.004$). While intermittent employees also rated higher on whether they “liked the type of work they did” (4.43 vs. 4.19) and if “the reality of their job matched the expectations they had when hired” (4.43 vs. 3.50), these differences were not statistically significant. A consistent pattern emerged across all job satisfaction key aspects, with intermittent employees reporting significantly higher satisfaction levels than regular employees, with significant differences in five out of seven aspects measured.

Figure C.7 presents the average ratings of job satisfaction and significant differences in three aspects between some districts, with Vincennes District generally reported higher satisfaction levels. Regarding whether they “received adequate training to be successful at their job,” Vincennes District (3.94) rated significantly higher than Central Office (3.69, $p = 0.023$) and Greenfield District (3.64, $p = 0.018$). When examining whether “had enough freedom in making decisions to do their job effectively,” Vincennes District reported the highest rating (4.25), showing significant differences compared to multiple districts: Central Office (3.72, $p = 0.002$), Fort Wayne District (3.45, $p = 0.004$), Greenfield District (3.48, $p = 0.047$), Seymour District (3.52, $p = 0.019$), and Others group (3.13, $p = 0.049$). For whether they “had the resources and equipment needed to be successful,” Vincennes District (3.78) reported significantly higher ratings compared to Central Office (3.66, $p = 0.037$), Fort Wayne District (3.13, $p = 0.004$), Greenfield District (3.69, $p = 0.014$).

Figure C.8 shows the average ratings of job satisfaction and significant differences in six aspects between certain job roles. First, Intern/Seasonal/Rehired employees consistently reported the highest job satisfaction ratings across all aspects, scoring significantly higher than multiple other job roles. For training was enough, they scored significantly higher than Highway Technicians (4.57 vs. 3.33, $p < 0.001$), Engineers ($p = 0.031$), and Executive/Directors ($p = 0.018$). For freedom of making decisions, they rated significantly higher than Highway Technicians (4.67 vs. 3.35, $p < 0.001$). Regarding organization support in work/life balance, Intern/Seasonal/Rehired staff scored significantly higher than Highway Technicians (4.92 vs. 3.56,

$p < 0.001$), Engineers ($p = 0.003$), Executive/Directors ($p = 0.005$), and Managers ($p = 0.006$). For reasonable workload, they scored significantly higher than Highway Technicians (4.75 vs. 3.92, $p = 0.001$), Engineers ($p = 0.025$), Executive/Directors ($p = 0.049$), Managers ($p = 0.013$), and Project Supervisors ($p = 0.020$). They also scored significantly higher than Highway Technicians when asking if they had the resources workers needed (4.67 vs. 3.18, $p < 0.001$), Engineers ($p = 0.001$), Executive/Directors ($p = 0.003$), Managers ($p = 0.024$), and Project Supervisors ($p = 0.032$), and for job met workers expectations (4.46 vs. 3.42, $p = 0.014$). Second, the enjoyed work aspect showed no significant differences, indicating consistent satisfaction with work content regardless of position.

4.2.2.3 Manager (Seven Key Aspects). There are seven key aspects to evaluating workplace manager factor, including clear expectations, useful feedback, recognition for good work, held people accountable for results, resolved issues well, treated with respect, and trust in manager. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.9 shows employees' experiences with their managers across different age groups. When asked if "my manager held people accountable for results," employees aged 60 and over (3.94) rated significantly higher than those aged 40–49 (3.29, $p = 0.041$). Similarly, when asked if "my manager was effective in resolving issues," the 60 and over age group (3.98) rated significantly higher than the 40–49 age group (3.23, $p = 0.015$). For other aspects, while ratings varied across age groups, the differences were not statistically significant.

Figure C.10 presents employees' experiences with their managers across different generations, where Baby Boomers generally reported more positive perceptions of their managers. Regarding whether "my manager gave me useful feedback on my performance," Baby Boomers (3.98) reported significantly higher ratings than Millennials (3.49, $p = 0.046$). When asked if "my manager held people accountable for results," Baby Boomers rated significantly higher (3.88) than Millennials (3.38, $p = 0.039$). Similarly, when asked if "my manager was effective in resolving issues," Baby Boomers (3.93) rated significantly higher than Millennials (3.33, $p = 0.011$). No significant difference was found in four key aspects including clear expectations, recognition for good work, treated with respect, and trust in manager.

Figure C.11, Table C.2, and Figure C.12 show employees' experiences with their managers across gender, education, and ethnicity groups, with no statistically significant differences found among these groups. Figure C.11 shows that ratings were consistently similar between female and male employees. When asked if "my manager clearly communicated expectations for my performance," females rated 3.83 and males 3.76. For whether "my manager gave me useful feedback on my performance," females rated 3.73 and males 3.71. Both genders showed similar ratings for other aspects including whether "my manager provided recognition for good work" (females: 3.82, males: 3.67),

"held people accountable for results" (females: 3.77, males: 3.59), and "was effective in resolving issues" (females: 3.62, males: 3.57). Table C.2 shows that while some variation existed, with More than Bachelor's Degree holders generally rating higher (ranging from 3.8 to 4.3) and Some College generally rating lower (ranging from 3.3 to 3.7), these differences were not statistically significant. Associate Degree and Bachelor's Degree holders also tended to rate their managers favorably across all aspects. Figure C.12 shows that Black employees generally gave slightly higher ratings across all aspects (ranging from 3.76 to 4.06) compared to White employees (ranging from 3.56 to 3.90) and Others (ranging from 3.60 to 4.02), but these differences were not statistically significant. All ethnic groups reported relatively positive perceptions of their managers, particularly regarding respectful treatment and trust.

Figure C.13 shows the average ratings of employees' perceptions of their managers and highlights significant differences in six aspects between certain tenure groups, with newer employees (0–3 months) consistently reporting more positive perceptions of their managers. When asked if "my manager clearly communicated expectations for my performance," new employees (0–3 months) rated significantly higher (4.46) compared to 6 months–1 year (3.69, $p = 0.023$) and 5–10 years (3.46, $p = 0.006$). Regarding whether "my manager gave me useful feedback on my performance," the 0–3 months group (4.42) rated significantly higher than multiple tenure groups: 6 months–1 year (3.52, $p = 0.009$), 1–3 years (3.73, $p = 0.037$), 3–5 years (3.52, $p = 0.023$), and 5–10 years (3.48, $p = 0.009$). For whether "my manager provided recognition for good work," new employees (4.58) reported significantly higher ratings compared to several groups: 6 months–1 year (3.70, $p = 0.014$), 1–3 years (3.563, $p < 0.001$), 3–5 years (3.48, $p = 0.007$), 5–10 years (3.40, $p < 0.001$), and 15 years or more (3.82, $p = 0.004$). For whether "my manager held people accountable for results," new employees (4.55) rated significantly higher than those with 5-years working experience (3.32, $p = 0.048$). When asked if "my manager treated employees with respect," the 0–3 months group (4.65) rated significantly higher than multiple groups: 6 months–1 year (3.88, $p = 0.046$), 1–3 years (3.90, $p = 0.004$), 3–5 years (3.79, $p = 0.018$), 5–10 years (3.54, $p = 0.001$), and 15 years or more (4.07, $p = 0.026$). Regarding "trust in manager," new employees (4.54) reported significantly higher ratings compared to several tenure groups: 6 months–1 year (3.61, $p = 0.013$), 1–3 years (3.730, $p = 0.012$), 3–5 years (3.60, $p = 0.019$), and 5–10 years (3.34, $p = 0.001$).

Figure C.14 shows significant differences between intermittent and regular workers across all aspects of manager evaluation, with intermittent workers consistently reporting more positive perceptions. When asked if "My manager clearly communicated expectations for my performance," intermittent workers rated significantly higher (4.79) compared to regular workers (3.74, $p = 0.002$). Regarding whether "My manager gave me useful feedback on my performance," intermittent workers (4.79) rated significantly higher than regular workers (3.68, $p < 0.001$). For "My manager provided recognition for good work," intermittent workers (4.79) reported significantly higher ratings compared to

regular workers (3.66, $p < 0.001$). When asked if “My manager held people accountable for results,” intermittent workers (4.68) rated significantly higher than regular workers (3.59, $p < 0.001$). Regarding whether “My manager was effective in resolving issues,” intermittent workers (4.71) rated significantly higher than regular workers (3.53, $p < 0.001$). For “My manager treated employees with respect,” intermittent workers (4.86) reported significantly higher ratings compared to regular workers (3.87, $p < 0.001$). When asked if “I trusted my manager,” intermittent workers (4.86) rated significantly higher than regular workers (3.72, $p < 0.001$). Intermittent workers consistently reported higher satisfaction levels across all aspects of manager evaluation compared to regular workers.

Figure C.15 shows the average ratings of employees’ perceptions of their managers and highlights some significant differences between certain districts in “Resolved issues well,” “Treated with respect,” and “Trust in manager” aspects. For aspects without statistically significant differences, the ratings across districts ranged from 3.58 to 4.16 for “My manager clearly communicated expectations for my performance,” 3.55 to 4.00 for “My manager gave me useful feedback on my performance,” 3.50 to 4.06 for “My manager provided recognition for good work,” and 3.35 to 3.88 for “My manager held people accountable for results.” Vincennes District generally showed higher ratings and Crawfordsville District lower ratings. For “My manager was effective in resolving issues,” significant difference was found ($p = 0.008$) between Greenfield District (3.85) and Vincennes District (3.97). “Treated with respect” also showed significant differences ($p = 0.025$) between Central Office (3.89) and Vincennes District (4.22). “Trust in manager” revealed several significant differences between districts: Vincennes District (4.13) rated significantly higher than Central Office (3.76, $p = 0.010$), Fort Wayne District (3.67, $p = 0.038$), and Greenfield District (4.03, $p = 0.047$).

Figure C.16 shows the average ratings of manager-related aspects and significant differences between certain job roles. First, Intern/Seasonal/Rehired employees consistently reported the highest ratings across all manager aspects, with scores of 4.79 for clear expectations, 4.77 for useful feedback, 4.85 for recognition for good work, 4.75 for held people accountable for results, 4.77 for resolved issues well, 4.92 for treated with respect, and 4.92 for trust in manager. They scored significantly higher than Highway Technicians across all manager factors: clear expectations (4.79 vs. 3.61, $p < 0.001$), useful feedback (4.77 vs. 3.55, $p < 0.001$), recognition for good work (4.85 vs. 3.52, $p < 0.001$), held people accountable for results (4.75 vs. 3.41, $p < 0.001$), resolved issues well (4.77 vs. 3.38, $p < 0.001$), and treated with respect (4.92 vs. 3.76, $p < 0.001$). For resolved issues well, Intern/Seasonal/Rehired staff also scored significantly higher than Executive/Directors ($p = 0.039$). For trust in manager, they had significant higher ratings than both Highway Technicians (4.92 vs. 3.55, $p < 0.001$) and Specialist/Consultant/IT ($p = 0.034$). Second, Engineers scored significantly higher than Highway Technicians for trust in manager (4.34 vs. 3.55, $p = 0.030$). Specialist/Consultant/IT consistently reported the lowest scores, with particularly low ratings for resolved issues well (2.92) and trust in manager (3.08).

4.2.2.4 Senior Leadership (Three Key Aspects). There are three key aspects to evaluating workplace senior leadership, including sufficient communication from Executive Leadership, clear vision, and valued employees. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.17 shows the average ratings of employees’ experience about senior leadership and significant differences between certain age groups, with the 60+ age group consistently reported the highest satisfaction and the 40–49 age group reported the lowest satisfaction. When asked if “There was sufficient communication from Executive Leadership,” the 40–49 age group showed significantly lower satisfaction (2.60) compared to the 60+ group (3.42, $p = 0.009$). For “Executive Leadership communicated a clear vision for the organization’s future,” the 60+ group had significantly higher satisfaction (3.66) compared to the 18–29 age group (3.04, $p = 0.039$) and the 40–49 age group (2.67, $p < 0.001$). Regarding whether “The Executive Leadership’s actions showed they valued their employees,” the 40–49 group rated significantly lower than the 50–59 age group (3.21, $p = 0.010$) and the 60+ group (3.24, $p = 0.003$).

Figures C.18–20 shows the average ratings of employees’ experience about senior leadership and across different generations, genders, and ethnicities, with no significant differences found among these groups. For generational differences, Baby Boomers showed consistently highest ratings (ranging from 3.16 to 3.56), while Generation Z reported the lowest ratings on communication (2.95) and vision (2.98), and Millennials gave the lowest rating on feeling valued (2.78). Gender analysis revealed that females rated slightly higher on communication (3.21 vs. 3.03), vision (3.34 vs. 3.13), and feeling valued (3.06 vs. 2.87). Among racial groups, Black employees’ ratings were the highest (ranging from 3.41 to 3.61) compared to White employees (ranging from 2.84 to 3.12) and other racial groups (ranging from 3.25 to 3.42).

Figures C.21–24 show the employees’ experience about senior leadership across the education, tenure, employment type, and location groups. Figure C.21 shows that only one significant difference was found: employees who did not indicate their education level rated “clear vision” significantly higher (2.99) than those with High School or Less (2.86, $p = 0.04$). For other key aspects, while Bachelor’s degree holders generally gave higher ratings for “sufficient communication” (3.64) and “valued employees” (3.26), these differences were not statistically significant. Figure C.22 shows that only one significant difference emerged: employees with 15 years or more tenure rated “clear vision” significantly higher (3.52) than those with 1–3 years (2.79, $p = 0.028$). For “sufficient communication” and “valued employees,” while ratings varied across tenure groups, no significant differences were found. Figure C.23 shows that, while intermittent employees consistently rated all three aspects higher (“sufficient communication:” 4.21 vs. 3.02, “clear vision:” 4.14 vs. 3.13, “valued employees:” 4.07 vs. 2.87) compared to regular employees, these differences were not statistically significant. Figure C.24 shows that only one significant difference was observed: Greenfield District rated “sufficient

communication” higher (3.51) than LaPorte District (3.10, $p = 0.041$). While some variation existed across locations for other key aspects, these differences were not statistically significant. This suggests that senior leadership was perceived similarly regardless of employees’ education, tenure, employment type, or location.

Figure C.25 shows the average ratings of employees’ experience about senior leadership and significant differences between certain job roles. First, for sufficient communication from executive leadership, Engineers scored significantly higher than Highway Technicians (3.58 vs. 2.70, $p = 0.022$), and Intern/Seasonal/Rehired employees also scored significantly higher than Highway Technicians (4.21 vs. 2.70, $p = 0.029$). Intern/Seasonal/Rehired staff reported the highest score (4.21), while Highway Technicians had the lowest rating (2.70). Second, there was no statistically significant differences in evaluating the clear vision and valued employees between job roles. However, similar patterns emerged with Intern/Seasonal/Rehired employees reporting the highest scores for clear vision (4.14) and valued employees (4.15), while Highway Technicians and Program Coordinators consistently showed among the lowest ratings across all senior leadership aspects.

4.2.2.5 Communication (Three Key Aspects). There are three key aspects to evaluating workplace communication, including kept informed, good communication in department, and effective communication between departments. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.26 shows the average ratings of workplace communication and some significant differences in two aspects between certain age groups, where employees aged 60 and over reported the most positive responses. When asked if they “were kept informed about matters that affected me,” employees aged 60 and over reported significantly higher ratings (3.85) compared to multiple age groups: 18–29 years (3.18, $p = 0.009$), 40–49 years (3.20, $p = 0.023$). Regarding whether they “were satisfied with the communication in my department,” the 60 and over age group (3.96) rated significantly higher than all groups: 18–29 years (3.03, $p < 0.001$), 30–39 years (3.24, $p = 0.003$), 40–49 years (3.18, $p = 0.004$), and 50–59 years (3.32, $p = 0.018$). For whether “communication between departments was effective,” while ratings varied across age groups (ranging from 2.72 for 18–29 years to 3.30 for 60 and over), these differences were not statistically significant.

Figure C.27 shows the average ratings of workplace communication and significant differences between certain generation groups, where Baby Boomers reported most positive perceptions. When asked if they “were kept informed about matters that affected me,” Baby Boomers (1946–1964) reported significantly higher ratings (3.74) compared to both Millennials (3.30, $p = 0.049$) and Gen Z (3.18, $p = 0.049$). Regarding whether they “were satisfied with the communication in my department,” Baby Boomers (3.84) rated significantly higher than all other generations: Gen X (3.30, $p = 0.002$), Millennials (3.20, $p = 0.017$), and Gen Z (3.04, $p = 0.003$). For whether

“communication between departments was effective,” while Baby Boomers rated this highest (3.26) compared to other generations (Gen X: 3.06, Millennials: 2.78, Gen Z: 2.72), these differences were not statistically significant.

Figure C.28, Figure C.29, and Table C.3 show the employees’ experience about workplace communication across gender, ethnicity, and education groups, with no statistically significant differences found among these groups. Figure C.28 shows that perceptions were similar between female and male employees. When asked if they “were kept informed about matters that affected me,” females rated 3.40 and males 3.39. For whether they “were satisfied with the communication in my department,” ratings were nearly identical (females: 3.35, males: 3.34). Regarding whether “communication between departments was effective,” females rated slightly higher (3.30) than males (2.86). Figure C.29 shows that while Black employees tended to rate communication aspects slightly higher (“kept informed:” 3.76, “good communication in department:” 3.69, “effective communication between departments:” 3.31) compared to White employees (3.33, 3.29, 2.90) and Others (3.67, 3.57, 3.12), these differences were not statistically significant. Table C.3 shows that those with More than Bachelor’s Degree and Not Indicated generally gave higher ratings across all three aspects (ranging from 3.3 to 3.8), while Technical School graduates typically gave lower ratings (ranging from 2.6 to 3.2).

Figure C.30 presents the average ratings of workplace communication and the significant differences between certain tenure groups, with newer employees (0–3 months) consistently reporting the most positive perceptions of workplace communication. When asked if they “were kept informed about matters that affected me,” new employees (0–3 months) rated significantly higher (4.23) compared to multiple tenure groups: 6 months–1 year (3.36, $p = 0.008$), 1–3 years (3.15, $p < 0.001$), 3–5 years (3.22, $p = 0.004$), 5–10 years (3.04, $p < 0.001$), and 15 years or more (3.58, $p = 0.017$). Regarding whether they “were satisfied with the communication in my department,” the 0–3 months group (4.17) rated significantly higher than several groups: 6 months–1 year (2.88, $p < 0.001$), 1–3 years (3.11, $p = 0.001$), 3–5 years (3.07, $p = 0.009$), and 5–10 years (3.10, $p = 0.006$). Additionally, employees with 10–15 years tenure (3.73) rated significantly higher than those with 6 months–1 year tenure (2.88, $p = 0.003$). For whether “communication between departments was effective,” the only significant difference was between 15 years or more (3.25) and 1–3 years tenure groups (2.65, $p = 0.046$).

Figure C.31 and Figure C.32 show the average ratings of workplace communication and significant differences between two employment types and some locations. Figure C.31 shows that intermittent employees reported significantly higher satisfaction across multiple aspects. When asked if they “were kept informed about matters that affected me,” intermittent employees rated significantly higher (4.50) than regular employees (3.35, $p = 0.017$). Similarly, for whether they “were satisfied with the communication in my department,” intermittent employees (4.61) rated significantly higher than regular employees (3.29, $p = 0.001$). While intermittent employees also rated “communication between departments was effective” higher (3.96) than regular employees (2.91), this difference was not statistically

significant. Figure C.32 shows that Vincennes District rated significantly higher (3.59) than Greenfield District (3.54, $p = 0.046$) when asked if they “were kept informed about matters that affected me.” For whether they “were satisfied with the communication in my department,” Vincennes District (3.88) rated significantly higher than Greenfield District (3.34, $p = 0.017$). For “communication between departments was effective,” while ratings varied across locations (ranging from 2.60 to 3.26), these differences were not statistically significant. Vincennes District consistently showed the highest satisfaction in workplace communication.

Figure C.33 shows the average ratings of workplace communication and significant differences between certain job roles. For kept informed, Intern/Seasonal/Rehired employees scored significantly higher than Highway Technicians (4.34 vs. 3.18, $p < 0.001$), Executive/Directors ($p = 0.015$), and Project Supervisors ($p = 0.027$). Engineers also outperformed Highway Technicians (3.84 vs. 3.18, $p = 0.028$). For good communication in department, Intern/Seasonal/Rehired staff scored significantly higher than Highway Technicians (4.69 vs. 3.06, $p < 0.001$), Engineers ($p = 0.027$), Executive/Directors ($p = 0.016$), Managers ($p = 0.009$), and Project Supervisors ($p = 0.045$). They reported the highest rating (4.69) for this dimension. For effective communication between departments, Engineers scored significantly higher than Highway Technicians (3.45 vs. 2.61, $p = 0.002$). Intern/Seasonal/Rehired employees also reported the highest score (4.08) for this factor, though specific statistical comparisons beyond the Engineer-Highway Technician difference are not detailed in the provided tables.

4.2.2.6 Growth and Development (Three Key Aspects).

There are three key aspects to evaluating workplace growth and development, including opportunities to grow, supported promotional growth, and promotion chances. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.34 shows the average ratings of workplace growth and development and significant differences between certain age groups, with employees aged 60 and over reported the most positive perception and employees in their 40s generally reported lower satisfaction. When asked if they “were provided with opportunities to grow professionally,” employees aged 60 and over reported significantly higher ratings (3.70) compared to those aged 40–49 (2.90, $p = 0.007$). Regarding whether they “had someone at work who encouraged my professional development,” the 60 and over age group (3.72) rated significantly higher than both 30–39 year olds (3.24, $p = 0.013$) and 40–49 year olds (3.28, $p = 0.002$). When asked if they “felt they had the opportunity to be promoted,” while the 60 and over age group rated this highest (3.53) compared to other age groups (18–29: 3.08, 30–39: 2.79, 40–49: 2.61, 50–59: 2.86), these differences were not statistically significant.

Figure C.35 presents the average ratings of workplace growth and development and significant differences between certain generation groups. When asked if they “were provided with opportunities to grow professionally,” Baby Boomers

(1946–1964) reported significantly higher ratings (3.63) compared to Gen X (3.10, $p = 0.047$). When asked if they “felt they had the opportunity to be promoted,” Baby Boomers (3.40) rated significantly higher than both Gen X (2.75, $p = 0.022$) and Millennials (2.80, $p = 0.024$). Regarding whether they “had someone at work who encouraged my professional development,” while ratings varied across generations (Baby Boomers: 3.62, Gen X: 3.47, Millennials: 3.32, Gen Z: 3.81), these differences were not statistically significant.

Figure C.36 shows the average ratings of workplace growth and development and significant differences between gender groups. Only one significant difference was found: when asked if they “felt they had the opportunity to be promoted,” male employees rated significantly higher (3.04) than female employees (2.74, $p = 0.024$). For whether they “were provided with opportunities to grow professionally” (females: 3.37, males: 3.24) and whether they “had someone at work who encouraged my professional development” (females: 3.67, males: 3.46), differences were not statistically significant.

Figure C.37 and Table C.4 show the average ratings of workplace growth and development across ethnicity and education groups, with no significant differences found. Figure C.37 shows that employees in the Other ethnic groups rated opportunities to grow slightly higher (3.73) compared to White (3.23) and Black employees (3.19), and similar patterns appeared in professional development support and promotion chances. Table C.4 shows that ratings were relatively consistent across groups. Those who did not indicate their education level generally gave higher ratings (ranging from 3.3 to 3.7), while Technical School graduates typically gave lower ratings (ranging from 2.9 to 3.4).

Figure C.38 and Figure C.39 show the average ratings of workplace growth and development across tenure and employment types, where no significant differences found. Figure C.38 shows that new employees (0–3 months) generally rated career development aspects higher (“opportunities to grow:” 3.58, “supported professional growth:” 3.94, “promotion chances:” 3.60) compared to other tenure groups, and those with 10–15 years also showed relatively high ratings (3.61, 3.57, 3.21 respectively). Figure C.39 shows that intermittent employees consistently rated all aspects higher than regular employees (“were provided with opportunities to grow professionally:” 4.21 vs. 3.23; “had someone at work who encouraged my professional development:” 4.29 vs. 3.47; “felt they had the opportunity to be promoted:” 3.50 vs. 2.96)

Figure C.40 shows the average ratings of workplace growth and development across different locations, with limited significant differences found in professional development support. When asked if they “had someone at work who encouraged my professional development,” Seymour District (2.90) rated significantly lower than LaPorte District (3.36, $p = 0.039$) and Vincennes District (3.78, $p = 0.024$). For whether they “were provided with opportunities to grow professionally,” ratings varied across locations, with Central Office rating the highest (3.63) and Seymour District the lowest (2.98). Regarding whether they “felt they had the opportunity to be promoted,” while ratings ranged from 2.70 (Seymour District) to 3.30 (Greenfield District).

Figure C.41 shows the average ratings of workplace growth and development across job roles, with no statistical significance found. First, Intern/Seasonal/Rehired employees reported the highest ratings across all three growth and development aspects, scoring 4.25 for opportunities to grow, 4.33 for supported professional growth, and 3.45 for promotion chances. Second, Program Coordinators showed the lowest scores for opportunities to grow (2.57) and supported professional growth (3.00), while Specialist/Consultant/IT reported the lowest rating for promotion chances (2.38).

4.2.2.7 Compensation (Three Key Aspects). There are three key aspects to evaluating workplace compensation, including fair way for the work they did, fair pay compared to peers, and competitive pay. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.42 illustrates the average ratings of workplace compensation across age groups and significant differences between certain groups, where employees aged 60 and over reported most positive perceptions across all three aspects, while those in their 40s generally reported the lowest satisfaction with pay. When asked if they “were paid fairly for the work they did,” employees aged 60 and over reported significantly higher ratings (3.39) compared to multiple age groups: 18–29 years (2.81, $p = 0.036$), 30–39 years (2.89, $p = 0.038$), and 40–49 years (2.46, $p < 0.001$). Regarding whether they “were paid fairly compared to others at the organization doing similar work with similar experience,” the 60 and over age group (3.35) rated significantly higher than those aged 40–49 (2.41, $p < 0.001$). When asked if their “compensation was competitive with similar organizations in the area,” employees aged 60 and over (3.00) reported significantly higher ratings compared to multiple age groups: 18–29 years (2.15, $p = 0.002$), 30–39 years (2.43, $p = 0.044$), and 40–49 years (2.04, $p < 0.001$).

Figure C.43 illustrates the average ratings of workplace compensation across age groups and significant differences between certain groups, where Baby Boomers reported the highest satisfaction with pay, while Gen X generally reported the lowest satisfaction. When asked if they “were paid fairly for the work they did,” Baby Boomers (1946–1964) reported significantly higher ratings (3.35) compared to both Gen X (2.65, $p < 0.001$) and Millennials (2.80, $p = 0.004$). Regarding whether they “were paid fairly compared to others at the organization doing similar work with similar experience,” Baby Boomers (3.29) rated significantly higher than Gen X (2.63, $p = 0.008$). When asked if their “compensation was competitive with similar organizations in the area,” Baby Boomers (2.98) reported significantly higher ratings compared to all younger generations: Gen X (2.15, $p < 0.001$), Millennials (2.34, $p = 0.003$), and Gen Z (2.19, $p = 0.007$).

Figure C.44 and Figure C.45 show the average ratings of workplace compensation across gender and ethnicity groups, with no statistical significance found. Figure C.44 shows that, when asked if they “were paid fairly for the work they did,” females rated slightly higher (3.14) than males (2.84). For whether they “were paid fairly compared to others at the

organization doing similar work with similar experience,” ratings were nearly identical (females: 2.89, males: 2.90). When asked if their “compensation was competitive with similar organizations in the area,” females rated slightly higher (2.55) than males (2.40). Figure C.45 shows that the employees in the Other ethnic groups reported slightly higher ratings across all aspects (“paid fairly for work:” 3.17, “paid fairly compared to peers:” 2.98, “competitive pay:” 2.40) compared to White employees (2.89, 2.92, 2.44) and Black employees (2.83, 2.74, 2.22).

Figure C.46 shows employees’ perceptions of compensation across education levels, with some significant differences found between certain education groups. When asked if they “were paid fairly for the work they did,” employees who did not indicate their education level reported significantly higher ratings (3.45) compared to both High School or Less (2.78, $p = 0.018$) and Technical School holders (2.57, $p = 0.028$). For whether their “compensation was competitive with similar organizations in the area,” those who did not indicate their education level (3.05) rated significantly higher compared to several groups: High School or Less (2.36, $p = 0.035$), Associate Degree (2.13, $p = 0.048$), and Bachelor’s Degree holders (2.25, $p = 0.038$). Regarding whether they “were paid fairly compared to others at the organization doing similar work with similar experience,” while ratings varied across education levels (ranging from 2.64 for Technical School and Associate Degree to 3.31 for Not Indicated), these differences were not statistically significant.

Figure C.47 presents employees’ perceptions of compensation across tenure groups, with some significant differences found between certain education groups. When asked if they “were paid fairly compared to others at the organization doing similar work with similar experience,” employees with 15 years or more tenure (3.21) rated significantly higher than those with 3–5 years tenure (2.37, $p = 0.021$). Regarding whether their “compensation was competitive with similar organizations in the area,” those with 15 years or more tenure (2.77) reported significantly higher ratings than those with 1–3 years tenure (2.13, $p = 0.028$). For whether they “were paid fairly for the work they did,” while ratings varied across tenure groups (ranging from 2.49 for 3–5 years to 3.23 for 0–3 months), these differences were not statistically significant. Results show that employees with longer tenure (15+ years) generally reported more positive perceptions of compensation compared to those with mid-level tenure (1–5 years).

Figure C.48 and Figure C.49 show employees’ average perceptions of workplace compensation across employment types and locations, with some significant differences between two employment types. Figure C.48 shows that, when asked if they “were paid fairly for the work they did,” intermittent employees rated significantly higher (4.43) than regular employees (2.84, $p = 0.024$). Similarly, when asked if their “compensation was competitive with similar organizations in the area,” intermittent employees (3.07) rated significantly higher than regular employees (2.39, $p = 0.002$). For whether they “were paid fairly compared to others at the organization doing similar work with similar experience,” while intermittent employees rated higher (4.00) than regular employees (2.86), this difference was not statistically significant. Figure C.49 shows that, while there were

some variations in ratings across districts (“paid fairly for work:” 2.66–3.33, “paid fairly compared to peers:” 2.68–3.26, “competitive pay:” 2.21–2.80), none of these differences were statistically significant. Central Office and Vincennes District generally showed higher ratings across all three aspects, while LaPorte District and Seymour District typically showed lower ratings.

Figure C.50 shows employees’ average perceptions of workplace compensation and significant differences in one aspect between certain job roles. For fair pay, Intern/Seasonal/Rehired employees scored significantly higher than Highway Technicians (4.64 vs. 2.71, $p < 0.001$), Engineers ($p < 0.001$), Executive/Directors ($p < 0.001$), Managers ($p < 0.001$), Project Supervisors ($p < 0.001$), and Administrative staff ($p = 0.037$). Intern/Seasonal/Rehired staff reported the highest rating (4.64) for fair pay, while Highway Technicians recorded the lowest score (2.71). The fair pay compared to peers and competitive pay aspects showed no statistically significant differences.

4.2.2.8 Benefits (Three Key Aspects). There are three key aspects to evaluating workplace benefits, including benefits met worker needs, competitive benefits, and clear benefits information. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figure C.51 and Figure C.52 show employees’ average perceptions of benefits across age and generation groups, with no statistical significance found. Figure C.51 shows that, employees aged 60 and over gave higher ratings when asked if “the benefits package met my needs” (3.75), if “my benefits were competitive with similar organizations in the area” (3.64), and if “my benefits were clearly communicated so that I understood them” (3.85) compared to other age groups. Figure C.52 shows that Baby Boomers (1946–1964) consistently showed higher ratings across all aspects. When asked if “the benefits package met my needs” (3.73), if “my benefits were competitive with similar organizations in the area” (3.63), and if “my benefits were clearly communicated so that I understood them” (3.79), they rated higher than other generations.

Figure C.53 illustrates the average ratings of workplace benefit and significant differences in two aspects between genders. Male employees reported significantly higher ratings in two aspects: when asked if “my benefits were competitive with similar organizations in the area” (males: 3.46, females: 3.20, $p = 0.005$) and if “my benefits were clearly communicated so that I understood them” (males: 3.58, females: 3.40, $p = 0.012$). For whether “the benefits package met my needs,” while males rated slightly higher (3.53) than females (3.40), this difference was not statistically significant.

Figure C.54, Table C.5, and Figure C.55 show the average ratings of workplace benefit across ethnicity, education, and tenure groups, with no statistical significance found. Figure C.54 shows that Black employees tended to rate benefits aspects slightly higher when asked if “the benefits package met my needs” (3.74), if “my benefits were competitive with similar organizations in the area” (3.70), and if “my benefits were clearly communicated so that I understood them” (3.81) compared to White employees and Others. Table C.5 shows that

Bachelor’s degree holders generally reported higher ratings (“benefits package met my needs:” 3.8, “benefits were competitive:” 3.8, “benefits were clearly communicated:” 3.9) compared to other education levels, particularly Some College and Associate Degree holders (ranging from 3.2 to 3.3). Figure C.55 shows that groups with 10+ years tenure showed slightly higher ratings in “benefits package met my needs” (3.78) and competitive benefits (3.78), and those with 3–6 months showed higher ratings in clear benefits info (3.88).

Figure C.56 shows the average ratings of workplace benefits between employment types, with significant difference highlighted. By employment types, regular employees consistently rated significantly higher than intermittent employees when asked if “the benefits package met my needs” (regular: 3.56, intermittent: 2.21, $p < 0.001$), if “my benefits were competitive with similar organizations in the area” (regular: 3.46, intermittent: 2.25, $p < 0.001$), and if “my benefits were clearly communicated so that I understood them” (regular: 3.60, intermittent: 2.18, $p < 0.001$).

Figure C.57 shows the average ratings of workplace benefits across locations, with no significant difference found. Greenfield District had highest ratings in “benefits package met my needs” (3.74) and “benefits were competitive” (3.70), and Central Office showed highest ratings in “benefits were clearly communicated” (3.91). Vincennes District had the lowest ratings of all benefit key aspects (2.94, 2.94, 3.13 respectively). Overall, employment type is a significant factor in benefits perceptions, with regular employees consistently reporting more positive experiences across all aspects compared to intermittent employees. Location, however, did not significantly influence benefits perceptions.

Figure C.58 shows the average ratings of workplace benefits across job roles, with no statistically significant difference found. First, Intern/Seasonal/Rehired employees, who typically rated the highest in other key aspects of workplace experience, consistently reported the lowest scores across all benefits aspects, with ratings of 1.73 for benefits met worker needs, 1.82 for competitive benefits, and 1.50 for clear benefits info. Second, Specialist/Consultant/IT and Maintenance supervisors generally reported among the highest scores across benefits factors, with Administrative staff scoring 4.10 for benefits met worker needs, Specialist/Consultant/IT scoring 3.85 for competitive benefits, and Specialist/Consultant/IT scoring 4.31 for clear benefits information.

4.2.2.9 Rehire Potential (Two Key Aspects). There are two key aspects to evaluating workplace rehire potential, including would return here and would work with the same manager. ANOVA and Dunnett T3 post hoc test were conducted to compare each aspect across nine demographic characteristics, as explained in the following texts of this task.

Figures C.59–63 show employees’ willingness to return across age, generation, gender, ethnicity, and education groups, with no statistically significant difference found. Figure C.59 shows that when asked if they “would return here,” the lowest rating came from the 30–39 age group (3.43), while the highest rating was from the 40–49 group (3.83). For the question about whether they “would work with the same manager,” the 30–39 group again rated it the lowest (3.48), while the 60 and over group

rated it the highest (3.77). Figure C.60 shows that when asked if they “would return here,” Gen Z gave the lowest rating (3.39), while Millennials gave the highest (3.70). For the question about whether they “would work with the same manager,” Millennials rated it the lowest (3.45), while both Baby Boomers and Gen Z gave the highest rating (3.72). Figure C.61 shows that when asked if they “would consider returning to the organization,” ratings were similar between females (3.65) and males (3.62). For whether they “would consider returning to the same manager,” males rated slightly higher (3.61) than females (3.48). Figure C.62 shows that employees in the Other ethnicity group showed the highest ratings for returning to the organization (3.92), followed by Black employees (3.83) and White employees (3.58). Similarly, for working with the same manager, Others rated the highest (3.82), followed by Black employees (3.80) and White employees (3.55). Figure C.63 shows that Bachelor’s degree holders showed the highest ratings for returning to the organization (3.83), while Technical School graduates rated lowest (3.39). For working with the same manager, More than Bachelor’s degree holders rated the highest (3.91), while Technical School graduates again rated the lowest (3.18).

Figure C.64 illustrates employees’ willingness to return across tenures. When asked if they “would consider returning to the organization,” while ratings varied across groups (ranging from 3.44 for 3–5 years to 3.98 for 0–3 months), these differences were not statistically significant. When asked if they “would consider returning to the same manager,” new employees (0–3 months) rated significantly higher (4.44) compared to multiple tenure groups: 6 months–1 year (3.51, $p = 0.024$), 3–5 years (3.34, $p = 0.016$), 5–10 years (3.40, $p = 0.013$), and 15 years or more (3.54, $p = 0.004$).

Figure C.65 and Figure C.66 show employees’ willingness to return across employment types and locations. Figure C.65 shows that intermittent employees reported significantly higher ratings than regular employees when asked if they “would consider returning to the same manager” (4.64 vs. 3.55, $p < 0.001$), but had similar ratings with regular workers when asked if they “would consider returning to the organization” (4.43 vs. 3.59). Figure C.66 shows that, when asked if they “would consider returning to the organization,” ratings varied across districts (ranging from 3.44 for Crawfordsville District to 4.00 for Vincennes District), though these differences were not statistically significant. For whether they “would consider returning to the same manager,” Vincennes District (4.03) rated significantly higher than both Crawfordsville District (3.40, $p = 0.019$) and Greenfield District (3.82, $p = 0.015$).

Figure C.67 shows the average ratings of rehire potential across job roles, with significant differences between certain job roles. First, Intern/Seasonal/Rehired employees reported the highest scores for both aspects, rating 4.50 for would return here and 4.75 for would work with the same manager. They scored significantly higher than Highway Technicians for both would return here (4.50 vs. 3.47, $p = 0.032$) and would work with the same manager (4.75 vs. 3.42, $p < 0.001$). Second, Engineers also scored significantly higher than Highway Technicians for would return here (4.08 vs. 3.47, $p = 0.032$). Third, Executive/Directors reported the lowest score for would return here (3.30),

while Program Coordinators showed the lowest score for would work with the same manager (1.86).

4.2.2.10 Discussion. The research findings are summarized as follows:

- Age and Generation-Related Findings:
 - The 60+ age group/Baby Boomers (1946–1964) consistently reported the most positive experiences across multiple aspects of INDOT workplace environment, including cultural environment, job satisfaction, manager evaluations, and communication satisfaction. They also showed the highest satisfaction with compensation. This finding about Baby Boomers reporting higher workplace satisfaction is largely consistent with existing research, which show Baby Boomers scored significantly higher in job satisfaction than millennials (Attebery, 2017), or Gen X colleagues (Benson & Brown, 2011). However, Baby Boomers are retiring and leaving INDOT, which can cause a loss of institutional knowledge (Metro et al., 2021). Workers aged 60+ typically reported higher satisfaction with their pay, which might because they have reached career peaks and achieved their primary financial goals, leading to more favorable comparisons between their current and desired compensation levels.
 - The 40–49 age group/Gen X generally provided lower ratings across most key aspects, particularly in feeling valued, workplace recommendations, and whether their ideas were heard. They also reported the lowest satisfaction with pay. The results align with several established research studies in organizational behavior, though with some interesting nuances. This aligns with earlier research that Gen X consistently reported lower job satisfaction and organizational commitment compared to other generations (Benson & Brown, 2011; Twenge et al., 2010). To address the issue of losing the workforce aged 40–49/Gen X, it is recommended to implement a structured recognition program that facilitates their participation in organizational decision-making processes, ensuring their contributions are both acknowledged and implemented.
- Education-Level Findings:
 - Most aspects showed no significant differences across education levels, though those with Associate and Bachelor’s degrees tended to give higher ratings for culture. This is partially consistent with previous studies. Research shows that a meta-analysis of 74 studies with 134,924 participants found near-zero correlation between education and job satisfaction, and higher education leads to both positive (i.e., better job resources) and negative (i.e., higher task pressure) workplace experiences simultaneously (Solomon et al., 2022).
- Ethnicity-Related Findings:
 - Most aspects showed no significant differences across ethnic groups.
 - Black employees reported significantly higher satisfaction specifically in workload and resources.
 - White employees tended to give relatively lower ratings, particularly regarding feeling valued and recommending the organization.
 - The results contradict current research evidence showing:
 - (1) Black employees consistently report lower job satisfaction across multiple occupations and industries (Lee & Allen, 2023);
 - (2) White workers show higher satisfaction with pay and report feeling more valued compared to Black, Hispanic, and Asian workers (Horowitz & Parker, 2023). The finding of higher Black employee satisfaction with workload and resources also

contradicts established research showing: Black employees (1) are more likely to perceive lower levels of organizational support (Pullen et al., 2023); (2) report lower satisfaction levels across multiple workplace aspects (Blanding, 2023). The difference between these findings and existing research might be due to: (1) specific organizational context or culture; (2) different measurement methods; (3) unique workplace policies or practices that successfully address typical racial disparities; or (4) sampling differences or potential response biases.

- **Gender-Related Findings:**

- Male employees rated significantly higher in benefits-related questions, particularly regarding competitiveness and clear communication of benefits.
- Male employees showed slightly higher ratings than female employees in most key aspects.
- Female employees rated significantly lower on opportunities for promotion compared to male employees.

The results align with research showing that men have significant differences exist in pay and promotional opportunities, with women showing lower mean scores (Andrade et al., 2019). The difference between two genders can be attributed to: (1) Women facing more restrictive labor markets; (2) Lower career expectations among women due to historical discrimination; and (3) Different job preferences between genders, with women placing greater importance on work-life balance and intrinsic job qualities.

- **Employment Status Findings:**

- Intermittent employees consistently reported higher satisfaction across multiple aspects including workplace culture, job satisfaction, and manager evaluations.
- Regular employees rated significantly higher in all aspects of pay and benefits.

The results contradict with research that alternative work arrangements typically result in lower overall satisfaction (Spreitzer et al., 2017). This suggests INDOT might have developed particularly effective practices for engaging intermittent workers.

- **Tenure-Related Findings:**

- Employees with 0–3 months tenure reported the highest satisfaction levels across most key aspects of workplace experience.
- There was a significant decline in employee satisfaction in workplace experience after the initial 6-month period of employment, especially compared to those with 1–10 years of experience and more than 15 years of experience.
- Employees with 15+ years tenure rated significantly higher than those with 1–3 years of experience, when asked if “Executive Leadership communicated a clear vision for the organization’s future” and their “compensation was competitive with similar organizations in the area.” Employees with 15+ years tenure also rated significantly higher than those with 3–5 years of experience when asked if they “were paid fairly compared to others at the organization doing similar work with similar experience.”
- All other pairwise comparisons across tenure groups showed no significant differences.
- These findings show strong consistency with established research on the relationship between tenure and employee satisfaction. Studies show that job satisfaction typically follows a U-shaped pattern over time, with high initial satisfaction, followed by a decline, and then increasing again with

longer tenure (Dobrow et al., 2016). The decline in satisfaction typically occurs after the first year (Hunt & Saul, 1975), not at 6 months, which also partially aligns with the second research finding. Studies also indicate that tenure actually has a complex relationship with job satisfaction, where longer-tenured employees often show higher satisfaction levels, particularly when combined with positive affectivity (Duffy et al., 1998). Ang the relationship between tenure and satisfaction is moderated by various factors including work engagement and organizational support (Sia et al., 2023).

- **Location-Based Findings:**

- Vincennes District generally reported higher satisfaction levels across various aspects, particularly in job satisfaction and manager evaluation. This suggests that Vincennes District may have implemented particularly effective management practices or cultivated a positive workplace culture that could serve as a model for other districts. The successful practices from Vincennes District, particularly in management approaches and employee engagement, could be studied and potentially adapted for implementation in other districts.
- Limited significant differences were found across districts in most key aspects, with some variations in teamwork and communication satisfaction. This result indicates that INDOT has successfully implemented standardized practices, policies, and organizational culture across its various districts. However, the observed variations in teamwork and communication satisfaction across districts deserve particular attention. These differences likely stem from several factors. First, local leadership styles and team dynamics can significantly influence how employees collaborate and share information. Second, the physical layout and distribution of work teams within each district may affect communication patterns and team cohesion. INDOT might consider: (1) conducting a detailed analysis of communication practices in districts with higher satisfaction scores; and (2) implementing standardized communication protocols while allowing for necessary local adaptations.

- **Job role-Based Findings:**

- Intern/Seasonal/Rehired employees consistently reported the highest satisfaction levels across nearly all organizational aspects, including all culture factors, all job satisfaction factors, all manager factors, all communication factors, compensation (fair pay), and all rehire potential factors. For benefits-related factors, they scored the lowest across all aspects (benefits met worker needs, competitive benefits, clear benefits info), likely reflecting differences in benefit eligibility between temporary and permanent staff.
- Highway Technicians consistently reported poor workplace experiences, with statistically significant differences showing lower scores than Intern/Seasonal/Rehired staff across most factors and engineers in terms of perceived fairness, recommend working here, ideas were heard, trust in manager, and workplace communication.
- Engineers generally reported moderate to high satisfaction levels and showed statistically significant higher ratings than Highway Technicians in several key aspects, including culture factors (perceived fairness, recommend working here, ideas were heard), manager relationships (trust in manager), sufficient communication from senior leadership, communication (kept informed, effective communication between departments), and rehire potential (would return here).
- Specialist/Consultant/IT showed the lowest scores about manager-related factors and scored among the highest groups for benefits factors (competitive benefits, clear benefits info).

Administrative staff reported among the highest scores for benefits factors (benefits met worker needs, clear benefits info).

- Executive/Directors had lowest willingness to return to INDOT, and Program Coordinators showed low satisfaction with working with the same manager.

4.2.3 Exit Factors Analysis

This section involves analyzing multiple-choice questions from exit surveys collected between July 2022 and June 2024 to understand departing employees' perceptions of various factors influencing their decisions to leave the organization. The survey question of "Please rate the following factors in terms of how much impact they had on your decision to leave the organization" is followed by 13 exit factors, which are listed in Appendix D. The 13 exit factors include:

1. Compensation
2. Benefits
3. Immediate Supervisor
4. Senior Leadership
5. Job Duties
6. Growth Opportunities
7. Schedule
8. Workload
9. Culture
10. Communication
11. Job Security
12. Expectations vs. Reality
13. Personal Reasons

Participants were required to assign an impact level for each factor, selecting from four predefined categories: No Impact, Some Impact, Strong Impact, or Main Reason for Leaving. This section

focuses on analyzing the ratings of exit factors, where departing employees were asked to categorize 13 exit factors into one of the four impact levels. The aggregated results are presented across different impact levels in Figures 4.23 through 4.26, highlighting the top factors contributing to turnover and their respective levels of impact. These insights provide a comprehensive understanding of how these exit factors impact employee departures and can help INDOT improve retention.

4.2.3.1 Main Reason for Leaving. Figure 4.23 illustrates the factors that participants reported as the main reason for their decision to leave. The most frequently cited reasons are Compensation (24%) and Personal Reasons (22%), reflecting significant dissatisfaction with pay and individual circumstances influencing decisions to leave. Other notable factors include Growth Opportunities (12%), Immediate Supervisor (11%), and Senior Leadership (11%), which highlight challenges with career advancement and leadership. Additionally, Communication (9%) and Expectations vs. Reality (6%) indicate communication with colleagues and alignment with employee expectations are also important for employees at INDOT. Less frequently mentioned factors such as Benefits (3%), Workload (3%), and Job Security (2%), suggest areas of lower concern but are still relevant to retention strategies. Overall, the chart underscores a need for improvements in compensation, personal reason, and growth opportunities to better retain employees.

4.2.3.2 Strong Impact. Figure 4.24 presents the factors that participants identified as having a strong impact on their decision to leave the organization. Compensation (18%) was the most frequently reported factor, underscoring that dissatisfaction with pay remains a primary driver of employee turnover.

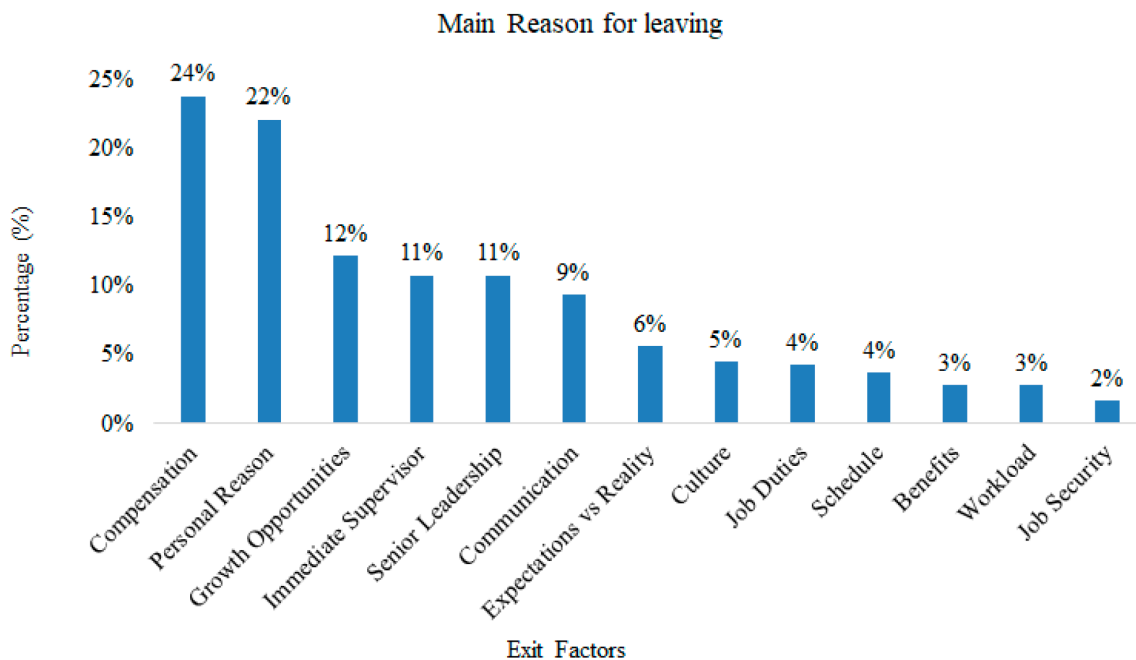


Figure 4.23 Percentage of Employees Citing Each Factor as the Main Reason for Leaving.

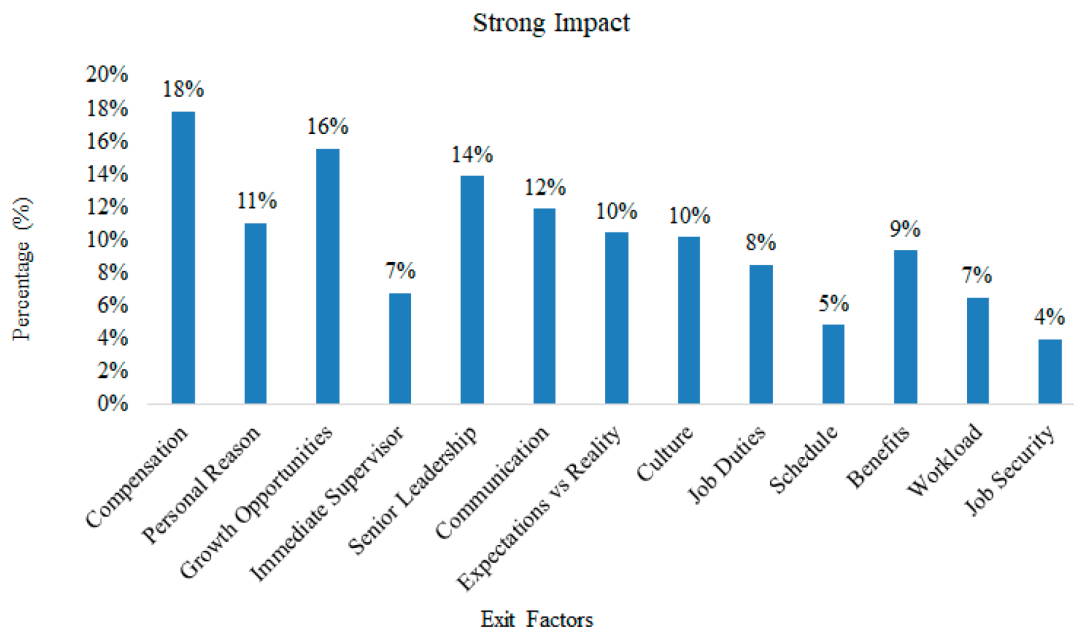


Figure 4.24 Percentage of Employees Reporting Strong Impact Factors on Leaving.

Growth Opportunities (16%) and Senior Leadership (14%) also emerged as significant influences, pointing to challenges with career advancement and concerns about upper management. Other key factors included Communication (12%), Personal Reasons (11%), Culture (10%), and Expectations vs. Reality (10%), highlighting the importance of effective communication, support for personal needs, a positive organizational culture, and alignment between job expectations and actual experiences. Moderately cited factors such as Benefits (9%), Job Duties

(8%), Immediate Supervisor (7%), and Workload (7%) suggest additional areas where targeted improvements could enhance the employee experience. Less frequently mentioned factors, including Schedule (5%) and Job Security (4%), were less influential overall but still had an impact on some employees.

4.2.3.3 Some Impact. Figure 4.25 illustrates the percentage of employees who reported that various factors had some impact on their decision to leave the organization. Communication (22%),

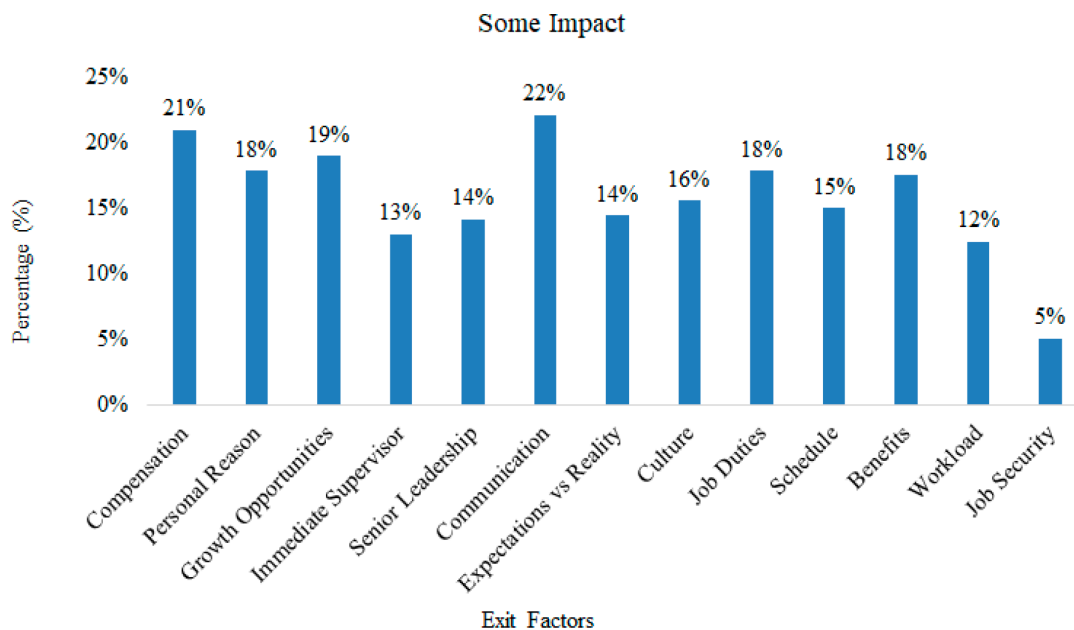


Figure 4.25 Percentage of Employees Reporting Some Impact Factors on Leaving.

Compensation (21%), and Growth Opportunities (19%) were the most commonly cited. Job Duties (18%), Benefits (18%), and Personal Reasons (18%) also ranked high, emphasizing the importance of concerns related to these factors. Other notable factors included Culture (16%) and Schedule (15%), which point to the relevance of workplace environment and schedule issues. Meanwhile, Immediate Supervisor (13%) underscores the impact of leadership and supervisory relationships on employee experiences. Lower percentages were reported for Workload (12%), Senior Leadership (14%), Expectations vs. Reality (14%), and Job Security (5%), suggesting that while these factors were less frequently cited as moderate influences, they still played a role in turnover decisions for some employees.

4.2.3.4 No Impact. Figure 4.26 presents the factors that employees most frequently reported as having “No Impact” on their decision to leave the organization, highlighting areas where dissatisfaction was generally not significant. The top three factors deemed non-influential were Job Security (79%), Workload (68%), and Schedule (67%), suggesting that concerns related to these factors were not major drivers of turnover. Similarly, Benefits (63%), Immediate Supervisor (62%), and Job Duties (60%) were also commonly reported as having no impact, indicating a general sense of satisfaction or neutrality in these factors. Other factors received more balanced responses, with lower “No Impact” percentages for Personal Reasons (39%), Growth Opportunities (44%), and Communication (46%), suggesting these factors were more likely to influence some employees’ decisions to leave. Notably, Compensation had the lowest “No Impact” percentage at 31%, reinforcing its role as an important factor in turnover decisions, consistent with its high ratings in the “Main Reason for Leaving” and “Strong Impact” categories.

4.2.3.5 Summary. The multiple-choice exit factors analysis highlights the diverse reasons employees cited for leaving the organization, categorized into four impact levels: Main Reason for Leaving, Strong Impact, Some Impact, and No Impact. Key findings include:

- **Main Reason for Leaving:** Compensation (24%) and Personal Reasons (22%) were the top reasons, followed by Growth Opportunities, Senior Leadership, and Communication, highlighting dissatisfaction with pay, individual circumstances, and career advancement challenges.
- **Strong Impact:** Compensation (18%), Growth Opportunities (16%), and Senior Leadership (14%) were key contributors, along with Communication, Personal Reasons, and Culture, indicating the influence of workplace environment and leadership.
- **Some Impact:** Communication (22%), Compensation (21%), and Growth Opportunities (19%) were the most frequently reported, reflecting moderate dissatisfaction with pay, transparency, and career progression.
- **No Impact:** Job Security (79%), Workload (68%), and Schedule (67%) were the least impactful, suggesting satisfaction with stability, workload distribution, and working time.

4.2.4 Demographic Analysis of High-Impact Exit Factors

The top three high-impact exit factors (Compensation, Personal Reasons, and Growth Opportunities) as identified in the “Section 4.2.3.1 Main Reason for Leaving,” were further examined using the demographic information of departing employees. The demographic variables include Age Groups, District Location, Highest Education Level, Ethnic Groups, Gender Groups, and Tenure Groups. The objective of this analysis is to identify the demographic group most associated with these exit factors. For instance, it explores whether younger

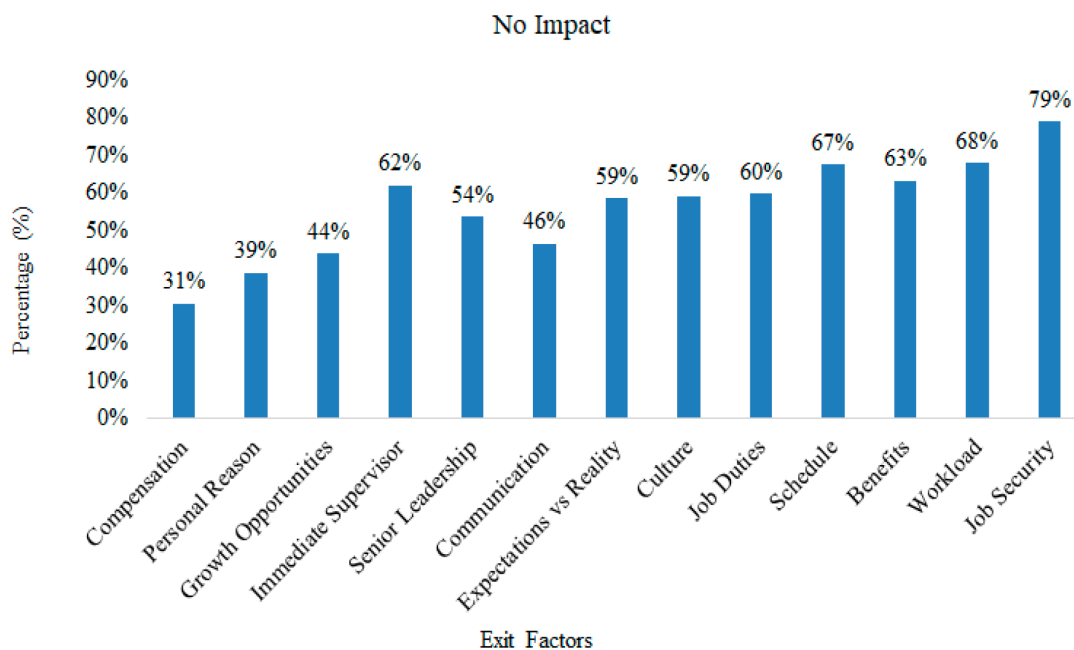


Figure 4.26 Percentage of Employees Reporting No Impact Factors on Leaving.

employees prioritize Growth Opportunities more than older employees or whether concerns about Compensation differ by gender. The results provide insights into how turnover factors impact diverse demographic groups, supporting more effective and targeted employee retention strategies.

4.2.4.1 Age groups distribution on high-impact exit factors. Figure 4.27 presents the distribution of the high-impact exit factors, including Compensation, Personal Reasons, and Growth Opportunities, by age groups.

For the Compensation factor, which emerged as a main reason for employee departure, especially among the 40–49 age group, 48% (23 employees) identified it as their main reason for leaving, representing the highest percentage across all age groups as shown in Figure 4.27a. The 30–39 group followed closely, with 30% (27 employees) citing Compensation as their main reason for leaving. Under-30 employees were evenly distributed across the four levels of impact for the Compensation factor, with 24% (17 employees) of them identifying Compensation as their main reason for leaving. In contrast, only 18% (9 employees) in the 50–59 group and 12% (8 employees) among those 60 + group reported it as the main reason.

For the Personal Reasons factor among the 60+ group, 27% (17 employees) of them cited Personal Reasons as the main reason for leaving. In the 50–59 group, 26% (13 employees) reported it as the main reason for leaving. Similarly, in the under 30 group, 24% (17 employees) listed Personal Reasons as their main reason for leaving, while 17% (12 employees) indicated a strong impact as shown in Figure 4.27b. Meanwhile, the 30–39 and 40–49 age groups each had around 20%–23% indicating Personal Reasons as their main reason for leaving.

For the Growth Opportunities factor, the impact distribution is shown in Figure 4.27c. It was cited as the main reason for leaving by the age 40–49 group, with 20% (10 employees). In the age 30–39 group, 18% (16 employees) cited it as their main reason for leaving, and another 21% (19 employees) reported a strong impact. The under 30 group also showed notable sensitivity: although only 10% (7 employees) cited Growth Opportunities as the main reason for leaving, a substantial 28% (20 employees) reported a strong impact. By contrast, older groups, especially those 50 and above, reported low levels of concern; only 14% (7 employees) in the 50 to 59 group and 5% (3 employees) in the 60+ group left due to Growth Opportunities factor.

These results suggest that the Compensation factor was cited as the main reason for leaving among the age groups 40–49 (48%) and 30–39 (30%). The Personal Reasons factor was cited as the main reason for leaving among the 40–49 (20%) and 30–39 (18%) age groups. The Growth Opportunities factor was cited as the main reason for leaving among those aged 60 and over (27%), and 50–59 (26%).

4.2.4.2 District location distribution on high-impact exit factors. Figure F.1 presents the distribution of the high-impact exit factors, including Compensation, Personal Reasons, and Growth Opportunities, by district locations.

The Compensation factor was identified as a main reason for leaving in several districts as shown in Figure F.1a. In the

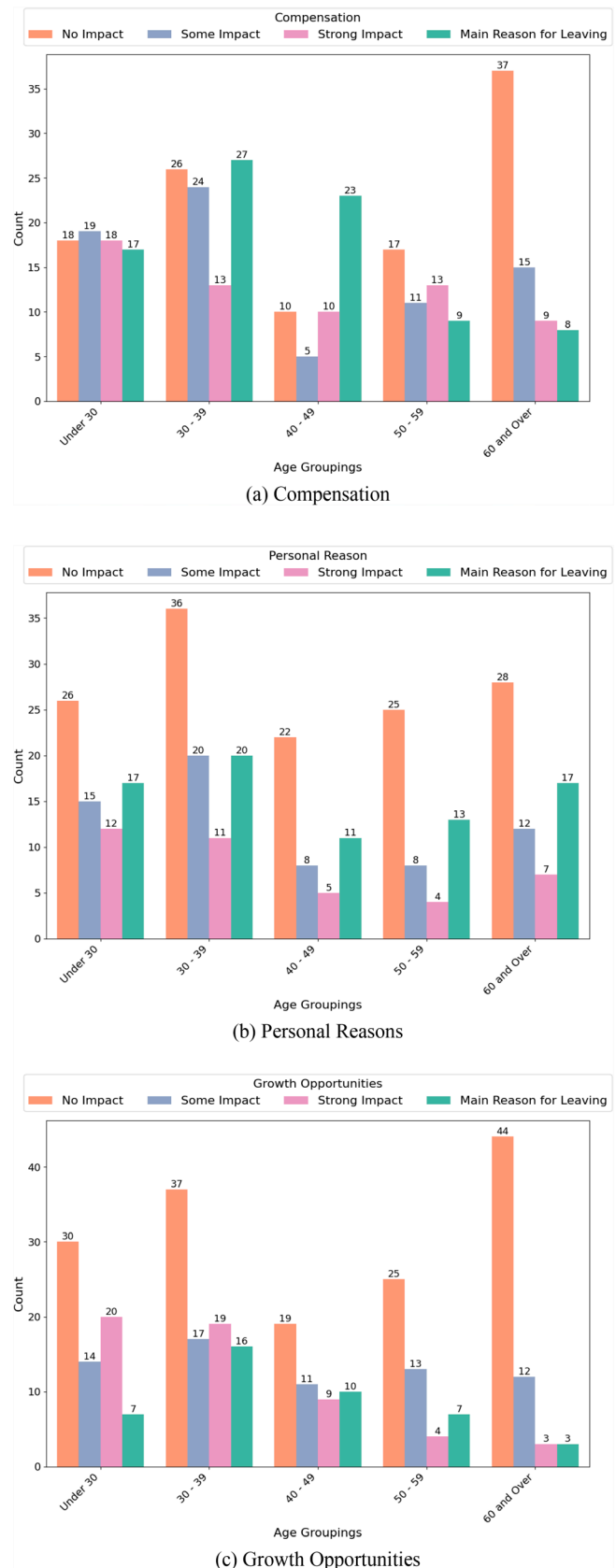


Figure 4.27 The Distribution of High-Impact Exit Factors by Age Group.

Greenfield District, 34% (14 employees) reported it as the main reason for leaving, followed by Seymour with 30% (7 employees) and Fort Wayne with 28% (14 employees). Crawfordsville and LaPorte each reported 27% (15 employees) and 27% (19 employees) leaving with the main reason of Compensation, respectively. Vincennes reported 21% (3 employees), and the Central Office reported 18% (10 employees).

For Personal Reasons factor, different impacts were identified across districts, as shown in Figure F.1b. Crawfordsville and Greenfield Districts had the highest percentage of employees citing Personal Reasons as the main reason for leaving, with 31% (17 employees) and 31% (12 employees) respectively. Central Office followed closely with 29% (15 employees). In terms of strong impact, 29% (15 employees) in Central Office and 21% (3 employees) in Vincennes reported that Personal Reasons had a strong influence on their decision to leave. In other districts, 28% (14 employees) in Fort Wayne, 16% (11 employees) in LaPorte, and 9% (2 employees) in Seymour cited Personal Reasons as the main reason for leaving.

For Growth Opportunities factor impact distribution, as shown in Figure F.1c, Vincennes and Greenfield Districts had the highest numbers of employees indicating no impact from the Growth Opportunities factor, with 64% (9 employees) and 55% (21 employees), respectively. Seymour also reported 55% (12 employees), followed closely by Central Office with 54% (29 employees). In contrast, Central Office reported the highest number of employees citing it as the Main Reason for Leaving, with 19% (10 employees), followed by Crawfordsville with 17% (9 employees).

These findings showed that Compensation was the main reason for leaving in several districts, with the highest percentages reported in Greenfield (34%), Seymour (30%), and Fort Wayne (28%). Personal Reasons factor was the most frequently cited in Crawfordsville and Greenfield (both 31%), followed by Central Office (29%) and Fort Wayne (28%). For Growth Opportunities, the Central Office had the highest percentage of employees citing it as the main reason for leaving (19%), followed by Crawfordsville (17%) and LaPorte (13%). These results highlight variation in primary exit reasons across different district locations.

4.2.4.3 Ethnic groups distribution on high-impact exit factors. Figure F.2 presents the distribution of the high-impact exit factors, including Compensation, Personal Reasons, and Growth Opportunities, by ethnic groups. Only Black and White employees were analyzed because several other ethnic groups (such as Asian) had very low response counts.

For the Compensation factor impact distribution, as shown in Figure F.2a, the Black employees had 24 respondents, with 38% (9 employees) citing Compensation factor as the main reason for leaving. The White employees had the largest sample of 279 respondents, with 25% (70 employees) indicating Compensation factor as their main reason for leaving.

For the Personal Reasons factor impact distribution, as shown in Figure F.2b, White employees had 270 respondents, with 24% (64 employees) marking Personal Reasons as the main reason for leaving. Black employees had 23 respondents,

with 26% (6 employees) citing Personal Reasons. While many reported no impact, Personal Reasons factor remains an important contributor to turnover.

For Growth Opportunities factor impact distribution, as shown in Figure F.2c, White respondents totaled 272, with 13% (34 employees) identifying Growth Opportunities as the main reason for leaving. Black employees showed 24 respondents, with 29% (7 employees) citing Growth Opportunities factor as the main reason for leaving.

These results suggest that Compensation was cited as a main reason for leaving by both Black (38%) and White (25%) employees. Similarly Personal Reasons factor was also cited as a main reason for leaving by both groups (Black: 26%; White: 24%). Although Growth Opportunities factor was mentioned less frequently overall, it emerged as a more prominent concern among Black (29%) employees compared to White (13%) employees. These findings underscore the importance of developing targeted retention strategies that address the specific needs of different ethnic groups.

4.2.4.4 Highest education level distribution on high-impact exit factors. Figure F.3 presents the distribution of high-impact exit factors, including Compensation, Personal Reasons, and Growth Opportunities, by highest education level. Several education levels had very low response counts and are not analyzed. These include “Less Than High School Graduate” (n = 1), “Some Graduate School” (n = 3), and “Doctorate (Professional)” (n = 4), as their small sample sizes limit generalizability. The “Not Indicated” is not included either.

For the Compensation factor impact distribution, as shown in Figure F.3a, employees with a master’s degree reported the highest percentage, with 38% (8 employees) citing it as their main reason for leaving. This was followed by those with a technical school education at 30% (8 employees), and employees with a high school (HS) diploma or equivalent at 29% (35 employees). Among bachelor’s degree holders, 25% (13 employees) cited Compensation, followed by 22% (10 employees) of those with some college education. The lowest percentage was among associate degree holders, with 16% (4 employees) reporting Compensation as their main reason for leaving.

For Personal Reasons factor impact distribution, as shown in Figure F.3b, employees with a master’s degree reported the highest percentage, with 30% (6 employees) citing it as their main reason for leaving. This was followed by those with a high school (HS) diploma or equivalent at 29% (35 employees), and those with some college education at 27% (12 employees). Employees with an associate degree reported 25% (6 employees), followed by 22% (11 employees) of those with a bachelor’s degree. The lowest percentage was among employees with a technical school diploma, with 15% (4 employees) citing Personal Reasons as their main reason for leaving, while the majority in that group, 54% (14 employees), reported no impact.

For the Growth Opportunities factor impact distribution, as shown in Figure F.3c, employees with a technical school education reported the highest percentage, with 23% (6 employees) citing it as their main reason for leaving. This was followed by those with a master’s degree at 19% (4 employees), associate

degree holders at 17% (4 employees), and bachelor's degree holders at 12% (6 employees). Employees with some college education and those with a high school (HS) diploma or equivalent each reported 11% (5 employees) and 11% (13 employees) employees, respectively. Although HS diploma holders had the highest count, the percentage was comparatively lower. Additionally, high proportions of "No Impact" responses were observed: 55% among those with a HS diploma or equivalent, 54% among those with some college education, and 48% among master's degree holders, indicating that perceived impacts of Growth Opportunities vary across education levels.

These results suggest that Compensation was the most frequently cited as the main reason for leaving by employees with a master's degree (38%), followed by those with technical school (30%) and high school education (29%). For Personal Reasons, the highest percentages were among master's degree holders (30%), high school graduates (29%), and those with some college education (27%). Regarding Growth Opportunities, technical school graduates reported the highest percentage (23%), followed by master's (19%) and associate degree holders (17%). These patterns suggest that exit reasons vary by education level.

4.2.4.5 Gender groups distribution on high-impact exit factors. Figure F.4 presents the distribution of high-impact exit factors, including Compensation, Personal Reasons, and Growth Opportunities, by gender groups. The group of unknown had only one person, so it is not included in the analysis.

For the compensation factor impact distribution, as shown in Figure F.4a, among males, 32% (84 employees) reported that Compensation had no impact on their decision to leave. However, a substantial portion, 29% (77 employees), identified it as their main reason for leaving, followed by 18% (47 employees) who indicated a strong impact. In contrast, only 11% (7 employees) of female respondents cited Compensation as their main reason for leaving, while 35% (23 employees) reported no impact and 25% (16 employees) indicated a strong impact. These results suggest that Compensation was more frequently cited as the main reason among males compared to females.

For the Personal Reasons factor impact distribution, as shown in Figure F.4b, 31% (20 employees) of female respondents reported it as the main reason for leaving, the highest percentage among female responses for this factor. Additionally, 38% of (24 employees) females indicated that it had no impact. Among male employees, 23% (57 employees) cited Personal Reasons as the main reason for leaving, while 45% (113 employees) reported no impact and 13% (33 employees) indicated a strong impact. The higher proportion of females citing Personal Reasons as the main reason for leaving compared to males suggests that this factor may weigh more heavily in female employees' decisions to leave.

For the Growth Opportunities factor impact distribution, as shown in Figure F.4c, 17% (11 employees) of females cited it as the main reason for leaving. This factor was mentioned less often than Compensation and Personal Reasons. In addition, 50% (32 employees) of females said it had no impact, and 14% (9 employees) reported a strong impact. Among males, 13% (32 employees) identified Growth Opportunities as the main

reason for leaving, with a substantial 48% (122 employees) reporting no impact and 18% (46 employees) indicating a strong impact.

These findings indicate that Compensation was a more significant concern for male employees, with 29% citing it as their main reason for leaving, compared to only 11% of female employees. In contrast, Personal Reasons were more frequently cited by females (31%) than males (23%). Similarly, 17% of females identified Growth Opportunities as their main reason for leaving, compared to 13% of males. Overall, while Compensation played a larger role in male turnover, Personal Reasons and Growth Opportunities were more influential for female employees.

4.2.4.6 Tenure groups distribution on high-impact exit factors. Figure F.5 presents the distribution of the of high-impact exit factors, including Compensation, Personal Reasons, and Growth Opportunities, by tenure groups.

For the Compensation factor impact distribution, as shown in Figure F.5a, the highest percentage of employees citing it as the main reason for leaving was among those with 3 to less than 6 months of tenure with 57% (8 employees), followed by 33% (6 employees) in the 10 to less than 15 years group, 28% (11 employees) in the 3 to less than 5 years group, 27% (19 employees) in the 1 to less than 3 years group, 25% (20 employees) in the 15 years or more group, 21% (5 employees) in the less than 3 months group, 19% (7 employees) in the 6 months to less than 1 year group, and 17% (8 employees) in the 5 to less than 10 years group. In terms of strong impact, the highest proportion was in the 1 to less than 3 years group with 26% (18 employees), followed by 25% (6 employees) in the less than 3 months group. For some impact, the 1 to less than 3 years group again showed the highest percentage at 26% (18 employees). Regarding no impact, the highest percentage was among those with 15 years or more with 43% (34 employees), followed by 38% (14 employees) in the 6 months to less than 1 year group, and 22% (4 employees) in the 10 to less than 15 years group.

For the Personal Reasons factor impact distribution, as shown in Figure F.5b, employees with shorter tenure showed a noticeable concern. The highest percentage citing it as the main reason for leaving was in the 3 to less than 6 months group with 36% (5 employees), followed by the 1 to less than 3 years group, 30% (21 employees), the 3 to less than 5 years group, 27% (10 employees), the less than 3 months group, 26% (6 employees), the 10 to less than 15 years group, 24% (4 employees), the 6 months to less than 1 year group and the 5 to less than 10 years group both at 22% (8 and 10 employees, respectively), and finally the 15 years or more group, 19% (14 employees).

For the Growth Opportunities factor impact distribution, as shown in Figure F.5c, the percentage of employees citing it as their main reason for leaving varied across tenure groups. The highest proportion was in the 3 to less than 5 years group with 21% (8 employees), followed by the 1 to less than 3 years group, 20% (14 employees), the 5 to less than 10 years group, 18% (8 people), and the 10 to less than 15 years and 15 years or more groups, both at 11% (2 and 8 employees, respectively). In contrast, the percentages were much lower among shorter-tenured

employees: 7% (1 employee) in the 3 to less than 6 months group, 5% (2 employees) in the 6 months to less than 1 year group, and 0% in the less than 3 months group, where no one cited it as the main reason for leaving.

These results suggest that Compensation was cited as the main reason for leaving the most by employees with 3 to less than 6 months of tenure (57%), followed by 10 to less than 15 years (33%). Personal Reasons were the highest among those with 3 to less than 6 months (36%) and 1 to less than 3 years (30%). Growth Opportunities were cited the most by employees with 3 to less than 5 years (21%) and 1 to less than 3 years (20%).

4.2.4.7 Summary. The demographic analysis of Compensation, Personal Reasons, and Growth Opportunities reveals meaningful variation across key workforce subgroups:

- **Age Groups:** Compensation was a primary concern for mid-career employees, especially those aged 40–49 (48%) and 30–39 (30%). Personal Reasons factor was more common among 40–49 (20%) and 30–39 (18%) age groups. The Growth Opportunities factor was the most important to employees aged 60 and over (27%) and those aged 50–59 (26%). It also had a notable impact on employees aged 30–39 (18% cited it as the main reason, 21% as a strong impact) and those under 30 (28% reported a strong impact).
- **District Locations:** Compensation was cited as main reason for leaving in Greenfield (34%), Seymour (30%). Personal Reasons factor was the most common in Crawfordsville and Greenfield (both 31%). Growth Opportunities factor generally had lower impact across districts, but Central Office (19%) and Crawfordsville (17%) reported it as main reason for leaving.
- **Ethnic Groups:** Both Black (38%) and White (25%) employees identified Compensation as a major reason for leaving. Personal Reasons factor was also similarly impactful (26% for Black, 24% for White). Growth Opportunities factor was more influential for Black employees (29%) than White (13%).
- **Highest Education Level:** The Compensation factor was cited as the main reason for leaving by employees with a master's degree (38%) and those with a technical school education (30%). The Personal Reasons factor was reported consistently across education levels, particularly among master's degree holders (30%) and high school graduates (29%). The Growth Opportunities factor was cited less frequently overall but remained meaningful for certain groups, such as technical school graduates (23%) and those with a master's degree (19%).
- **Gender Groups:** Compensation was more frequently cited by males (29%) than females (11%) as the main reason for leaving. Personal Reasons had greater impact among females (31%) compared to males (23%), showing gender differences in turnover drivers. Growth Opportunities factor was less impactful overall but slightly more common among females (17%) than males (13%), though most in both groups indicated low or no impact.
- **Tenure Groups:** Compensation concerns peaked among employees with 3 to <6 months of tenure (57%), followed by 10 to less than 15 years (33%). Personal Reasons were highest among those with 3 to less than 6 months (36%) and 1 to less than 3 years (30%). Growth Opportunities were most cited by employees with 3 to less than 5 years (21%) and 1 to less than 3 years (20%).

4.3 Textual Data Analysis Using Natural Language Processing (NLP) Method

This section presents a textual data analysis of open-ended responses from INDOT's employee exit survey, collected between July 2022 and June 2024. NLP methods were used to find insights into why employees chose to leave. The open-ended questions in the exit survey are as follows, and they are also listed in the Appendix E:

- Question 1: Please explain what was different than you expected?
- Question 2: What would it take for you to return to the organization?
- Question 3: What were your most important reasons for leaving the organization?
- Question 4: What recommendations do you have to make the organization a better place to work?
- Question 5: If you know of any compliance or integrity issues that have not been addressed with the organization (e.g., improper, unethical, or unlawful behavior), please explain.
- Question 6: Is there anything else you would like to add?

The responses to these open-ended questions form the primary dataset for this analysis, aiming to extract key insights into workforce outlook and turnover reasons using NLP techniques. The analysis follows a three-step process listed below in bullet points (Tian et al., 2024), and the workflow for this analysis is outlined in Figure 4.28. This systematic approach ensures that critical themes and insights are effectively extracted to inform organizational improvements.

- **Step 1 Narrative Extraction and Cleaning:** Raw text responses were preprocessed to remove irrelevant data, normalize text, and prepare it for analysis.
- **Step 2 N-gram Feature and Matrix Generation:** This step identified key phrases (e.g., unigrams, bigrams, and trigrams) and generated a frequency matrix to highlight recurring patterns.
- **Step 3 Data Analysis:** Patterns and trends were analyzed to identify significant factors and recommendations related to employee turnover.

The narrative extraction and cleaning process began with querying a dataset provided by the INDOT. This dataset contained 1,341 records of responses to six open-ended questions related to workforce turnover reasons. To prepare the data for NLP analysis, a sequence of preprocessing steps was conducted using the Natural Language Toolkit (NLTK) (Ferreira et al., 2019; Hardeniya et al., 2016). The steps included lowercase conversion to standardize the text, tokenization to split sentences into individual words, and the removal of stop words, which eliminated commonly used words such as “a,” “an,” and “the” that do not contribute significant meaning (Dreisbach et al., 2019). Then, stemming was applied to reduced words to their root forms, such as converting “working” to “work.” These preprocessing steps ensured the textual data was uniform, relevant, and ready for detailed analysis (Kumar et al., 2021).

Following preprocessing, N-gram feature and frequency matrix generation were performed. N-grams or combinations of words occurring together were extracted, including unigrams (single words), bigrams (two consecutive words), and trigrams

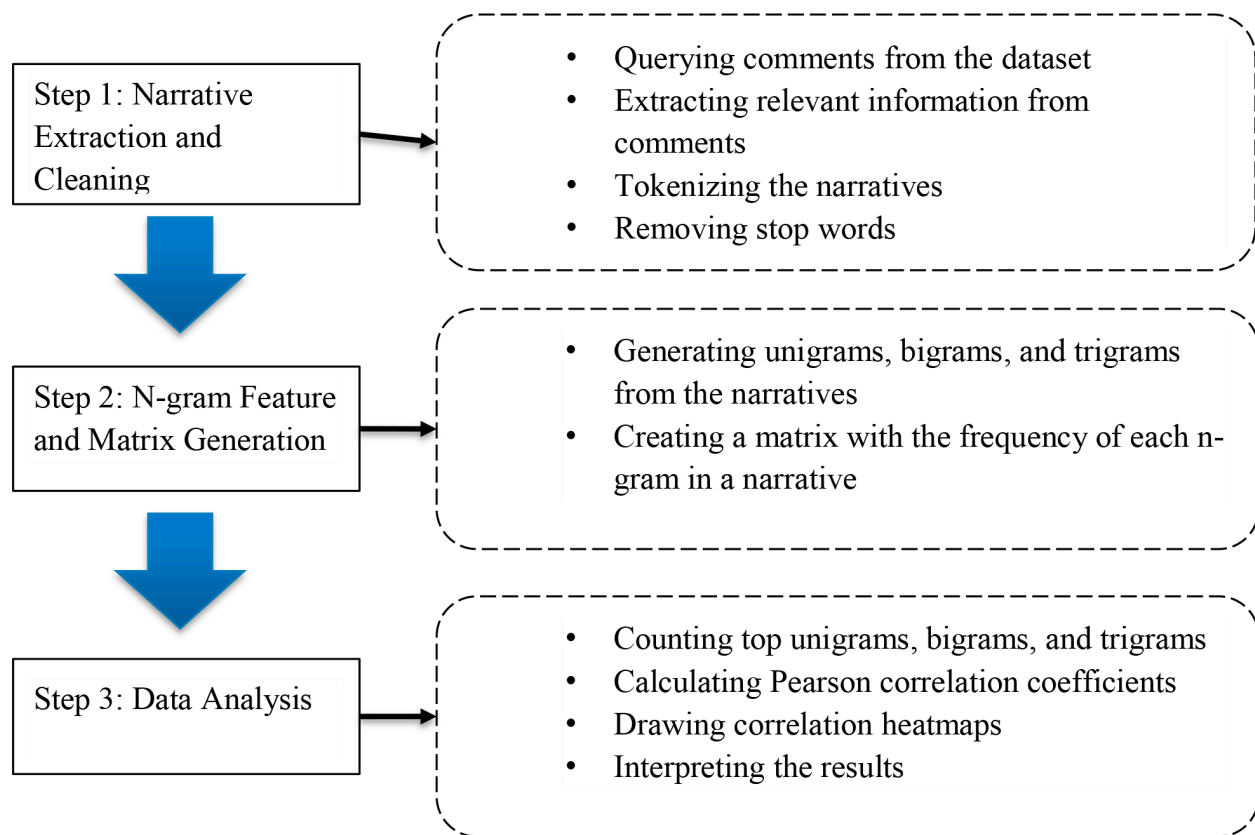


Figure 4.28 The Workflow of the Textual Data Analysis.

(three consecutive words). These N-grams were analyzed to capture recurring patterns and key phrases in the dataset. A frequency matrix was created, documenting how often each N-gram appeared in the responses. This structured approach allowed for a systematic exploration of the dataset, enabling the identification of common themes that highlight employees' experiences and concerns. The N-gram analysis provided a detailed understanding of how certain words and phrases were used to describe the themes influencing employees' decisions to leave INDOT.

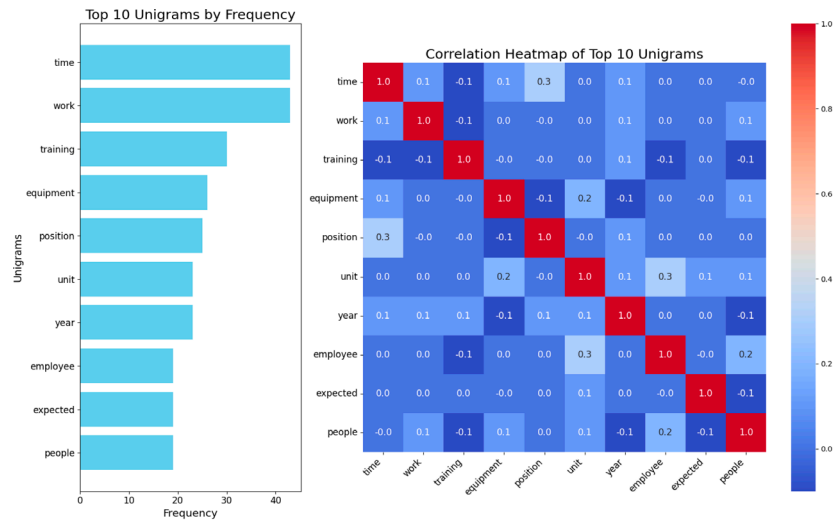
In this study, the top 10 unigrams, bigrams, and trigrams were identified based on their frequency, offering a clear overview of the most frequently mentioned issues in employee comments. To further explore the relationships among these N-grams, Pearson correlation coefficients were calculated and visualized in correlation heatmaps. These heatmaps revealed underlying connections between issues and provided deeper insights into employee concerns. The identified issues were then grouped into 14 themes. Because of the similarities and overlaps between these themes and the 13 exit factors described in Section 4.2.3, the themes were phrased in a similar manner whenever applicable. The 14 themes include: Compensation, Resources, Immediate Supervisor, Senior Leadership, Job Duties, Growth Opportunities, Schedule, Workload, Culture, Communication, Job Security, Expectations vs. Reality, and Emotional Ambivalence. By combining and analyzing the

frequency of themes across all survey questions, the analysis identified the most influential themes contributing to employee turnover to provide valuable insights for INDOT.

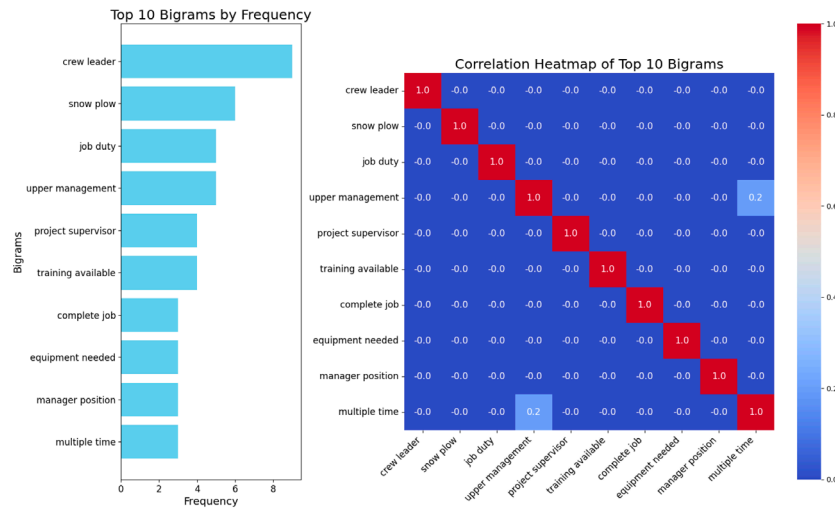
4.3.1 Question 1: Please explain what was different than you expected?

Figure 4.29a, Figure 4.29b, and Figure 4.29c present the top 10 frequent unigrams, bigrams, and trigrams, together with their matched correlation heatmaps, based on turnover employees' responses to Question 1: "Please explain what was different than you expected?" Five themes of 1. Resources (Training and Equipment), 2. Leadership, 3. Schedule, 4. Job Duties, and 5. Expectations vs. Reality were identified.

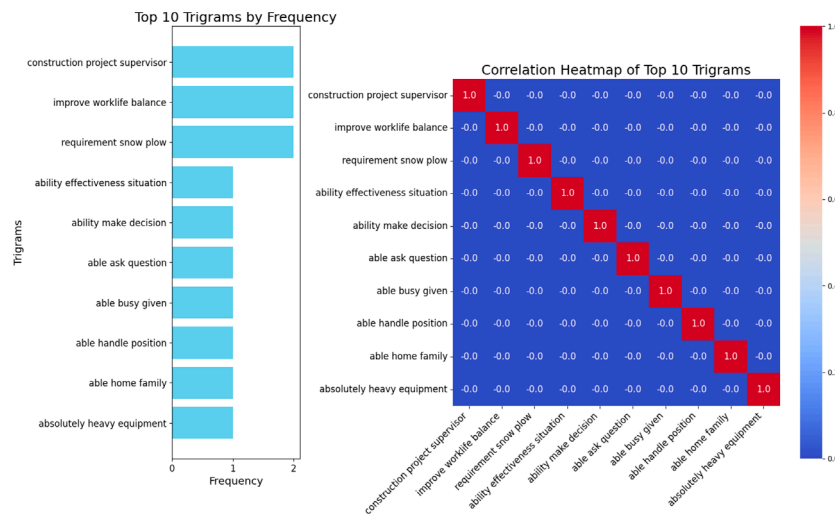
Here is a summary of each of the five themes. First, employees reported inadequate training and insufficient/outdated equipment. Second, leadership concerns focused on immediate supervisors, with issues such as favoritism, lack of accountability, and insufficient support. Third, scheduling problems included rigid hours, last-minute changes, seasonal demands, and unpaid extra work. Fourth, job duties were often characterized by unclear work scopes, unsupportive, and imbalanced workloads. Finally, expectations versus reality reflected issues with unsupportive, unfulfilled job promises, and mismatches between stated roles and actual responsibilities. The details of each theme are listed below.



(a) Top 10 Unigrams and Correlation Heatmap



(b) Top 10 Bigrams and Correlation Heatmap



(c) Top 10 Trigrams and Correlation Heatmap

Figure 4.29 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 1.

4.3.1.1 1. Resources (Lack of Training and Equipment).

Training and equipment issues were categorized under Resources. Although “training” (frequency: 30) and “equipment” (frequency: 26) appeared frequently, their interpretation was often clarified by surrounding words. Bigrams also reflected a shared perception of inadequate preparation and insufficient resources, such as “training available” (frequency: 4) and “equipment needed” (frequency: 3). The trigram “requirement snow plow” (frequency: 2) also supported the concerns about insufficient equipment. Multiple respondents commented that they had to teach themselves or received only limited training. As one person noted, “The training provided by INDOT is doing the bare minimum.” Another response mentioned, “When I requested that particular training, I was told to keep asking as a reminder... But the training I received from my peers/team was outstanding.” In addition, some respondents indicated that there was insufficient equipment to support their work, such as “Not enough equipment or couldn’t get equipment to do what I needed to do,” and “There are times when we need newer equipment and don’t receive it. There are a lot of chainsaws/leaf blowers that are older and have issues starting.”

4.3.1.2 2. Immediate Supervisor. Frequent unigrams such as “position” (frequency: 25), “unit” (frequency: 23), and “employee” (frequency: 19), along with bigrams like “crew leader” (frequency: 9), “upper management” (frequency: 4), and “project supervisor” (frequency: 4), and the trigram of “construction project supervisor” (frequency: 2), reflected widespread concerns about supervisory practices at the unit level, including favoritism, lack of accountability, and insufficient support. Several respondents described issues with favoritism and the absence of accountability. For example, one employee stated, “Crew leaders were allowed to treat employees unfairly without any consequences.” Others pointed to the lack of support, as illustrated by one comment of “the orientation and guidance involved through sub-district and district personnel is tremendously lacking ... the personnel bringing up the issue is looked at as disgruntled.”

4.3.1.3 3. Job Duties. The bigram of “job duty” (frequency: 6) and the trigram of “complete job” (frequency: 3) pointed to concerns related to job duties, including unclear work scopes, lack of support, and imbalanced workloads. Several respondents described unclear work scopes. For example, one employee stated, “My job description contained many topics that I was never able to get to.” Others highlighted a lack of support. For example, one employee stated, “I didn’t have crew. I was told I was a bad leader when I said I need help.” In addition, respondents reported an imbalance in workload, such as “This position did not have enough work to stay busy. I spent many hours doing nothing,” and another noted, as in “I was doing the work of 3 positions.”

4.3.1.4 4. Schedule. Unigrams such as “work” (frequency: 43), “time” (frequency: 43), and “year” (frequency: 23), along with the bigram “multiple time” (frequency: 3) and the trigram “improve work-life balance” (frequency: 2), pointed to concerns

related to schedule, including irregular hours, reported last-minute assignments, restricted time off, and uncompensated extra hours. Respondents described irregular hours. For example, one employee stated, “More evening hours worked outside regular work hours, also for public meetings.” Others reported last-minute assignments. For example, one employee wrote, “Last minute call-in when needed. The worst was not knowing what needs done from day to day.” Several noted pressure, for example, “The expectation of being on call 24/7/365 made it hard to relax on days off and enjoy life outside of work.” Some cited restricted time off and seasonal travel. For example, one person wrote, “We are expected to travel and stay out in hotels during testing season, then expected to not take time off during plowing season.” Employees mentioned uncompensated extra hours. For example, one employee noted, “Lot more hours involved... Those were unpaid hours as overtime was not allowed.”

4.3.1.5 5. Expectations vs. Reality. Unigrams such as “expected” (frequency: 19), “position” (frequency: 25), and “time” (frequency: 43), along with the trigram “requirement snow plow” (frequency: 2), reflected concerns about the gap between expectations and reality, including a lack of support, unfulfilled job promises, and mismatch between stated roles and actual responsibilities. Several respondents described unmet expectations regarding a lack of support. For example, one employee noted, “I expected more teamwork environment. I expected when I would ask for help, I would receive it especially from upper management. I expected to be treated fairly and not taken advantage of.” Others mentioned limited follow-through on promised responsibilities. For example, one employee noted, “I was interviewed and hired to push alternative bridge materials forward toward standard specification. Any proposals I brought were sidelined or told to wait till the next year.” Some pointed to discrepancies between job descriptions and actual duties, with comments like “Lot more hours involved than expected. Those were unpaid hours” and “I hired into this position nearly 4 years ago. Very little that I currently do has any resemblance to what I hired into.”

4.3.2 Question 2: What would it take for you to return to the organization?

Figure G.1a, Figure G.1b, and Figure G.1c present the top 10 frequent unigrams, bigrams, and trigrams, together with their matched correlation heatmaps, based on turnover employees’ responses to Question 2: “What would it take for you to return to the organization?” Seven themes of 1. Compensation, 2. Immediate Supervisor, 3. Senior Leadership, 4. Job Duties, 5. Growth Opportunities, 6. Schedule, and 7. Culture were identified.

Here is a summary of each of the seven themes. First, employees most frequently cited low and unfair pay as the top reason for leaving, highlighting internal pay inequity, external pay inequity, and low wages. Second, poor relationships with immediate supervisors were marked by disrespect, lack of professionalism, insufficient support, tendencies to micro-manage or undermine employees, negative assumptions, and

poor attitudes with little constructive feedback. Third, senior leadership was described as demonstrating ineffective leadership approaches, lack of attention to operational needs, ethical issues, and favoritism. Fourth, regarding job duties, employees reported a lack of role consistency and unclear job roles. Fifth, regarding growth opportunities, employees cited limited paths for promotion. Sixth, scheduling challenges, such as rigid hours and excessive overtime, negatively affected work-life balance. Finally, workplace culture was characterized by favoritism, lack of employee voice, and lack of leadership response. The details of each theme are listed below.

4.3.2.1 1. Compensation. Unigrams such as “pay” (frequency: 82) and “money” (frequency: 31), along with bigrams like “better pay” (frequency: 19) and “competitive pay” (frequency: 6), revealed broad frustration with compensation, covering issues such as internal pay inequity, external pay inequity, and low wages. A positive correlation between “pay” and “year” ($r = 0.3$) suggested some concerns were tied to time on the job. Respondents cited internal pay inequity, with comments like “I was paid less than the techs I was training as an engineer” and “I received a \$2.00 raise at 13 years of service, while a coworker with 2.5 years got \$5.00, bringing them within less than a dollar of my pay.” Others noted external pay inequity, with comments like “Dump truck drivers who have their CDL Bs are averaging \$30+ an hour in other company... we were making \$21 an hour with high danger working in work zones,” while another employee said “I was offered \$40,000 more in the private sector for a lesser position.” Many employees also felt that benefits failed to offset low wages, with comments like “Good benefits aren’t enough. Benefits don’t pay bills” and “I loved what I did at INDOT, but I didn’t make enough money to feed my whole family on my salary.”

4.3.2.2 2. Immediate Supervisor. Unigrams such as “manager” (frequency: 35) and “management” (frequency: 31) were frequently mentioned, often referring to both immediate and senior leadership. In this section, the focus is on issues specifically tied to immediate supervisors, as many respondents clearly identified their direct managers as the primary source of dissatisfaction. The correlation between “manager” and “work” ($r = 0.3$) further highlighted how poor supervisory relationships negatively affected daily job experiences. Respondents described supervisors as disrespectful, lacking professionalism, unsupportive, prone to micromanaging or undermining employees, making negative assumptions, and providing little constructive feedback. For example, one employee commented: “My foreman and crew leader ... was disrespectful, unorganized, and many times extremely, extremely unprofessional ... You could offer me 50 bucks an hour, I still wouldn’t take it,” while another shared that during a period of mental health difficulty that the employee did not feel adequately supported by their supervisor. Several employees described being micromanaged or undermined, such as: “He also micromanaged all employees in attendance,” and “One of my crew leaders was very controlling and would not let us do things without his permission.” Another employee noted that he had made mistakes at times, but instead of engaging in

communication, the supervisor appeared to assume the worst. Many noted a lack of constructive feedback and bad attitudes, such as: “The only feedback I ever received from my supervisor was criticism,” and one employee also expressed that they were not valued by their supervisor.

4.3.2.3 3. Senior Leadership. Unigrams such as “manager” (frequency: 35) and “management” (frequency: 31) frequently appeared in the data. While they referred to both immediate supervisors and senior leaders, this section focuses specifically on senior leadership. Several respondents described concerns about leadership approaches, lack of attention to operational needs, ethical issues and favoritism. For example, one person wrote, “a change in executive leadership’s management approach would be an important factor in my decision to consider returning to the organization.” While another perceived that higher-level management placed less emphasis on operational needs such as staffing and equipment. Comments also raised ethical concerns and lack of accountability, such as “The manager falsified reports and was promoted even after multiple hostile work environment complaints” and “Employees who speak up about issues are seen as disgruntled and retaliated against.” In addition, respondents cited favoritism in promotions and opportunities, with comments like “Too many personal relationships are used to determine promotions” and “Just feel the same opportunities are not being given to everyone.”

4.3.2.4 4. Job Duties. The unigram “position” (frequency: 47) reflected concerns related to job roles, including a lack of role consistency and unclear job roles. A positive correlation between “position” and “year” ($r = 0.3$) suggested that some of these issues were linked to time in the role. Several respondents highlighted a lack of role consistency. For example, one person wrote, “Very little that I currently do resembles what I was hired to do.” Others mentioned unclear roles such as “The lack of clear job roles made my work much harder than it needed to be” and “Responsibilities kept changing without explanation, making it difficult to focus on priorities.”

4.3.2.5 5. Growth Opportunities. Bigrams such as “manager position” (frequency: 5) and “crew leader” (frequency: 10) reflected employee concerns related to promotion and unclear career pathways. One employee stated, “There are no clear paths for promotions or professional development outside of engineering roles,” while another commented, “I left because of limited growth opportunities. I’d return if there were clear paths for advancement.”

4.3.2.6 6. Schedule. Unigrams such as “need” (frequency: 30) and “year” (frequency: 31), when combined with the comments, reflected employees’ concerns related to scheduling. Many employees expressed that inflexible work expectations negatively impacted their personal lives and contributed to turnover. One respondent shared, “Flexible work schedules and less overtime would help me balance work and family responsibilities,” while another stated, “More work flexibility for those who work out in the field with children.”

4.3.2.7 7. Culture. The bigram “work environment” (frequency: 7) and the trigram “hostile work environment” (frequency: 3) highlighted employee concerns about workplace culture, including favoritism, lack of employee voice, and a lack of leadership response. Many respondents described a toxic atmosphere marked by favoritism, with comments like “The work environment felt toxic, with favoritism overshadowing teamwork” and “There is a serious amount of favoritism being allowed simply because of friendships, nepotism, and being in certain clubs.” Some responses also reflected lack of employee voice. For example, one person wrote, “Nobody feels like they have a voice.” In several cases, employees directly attributed the toxic culture to a lack of leadership response, with comments like “he have no compassion or attempt to understand or try to give help or guidance even I spoke to him” and “Upper management ignored repeated complaints about harassment and hostility.”

4.3.3 Question 3: What were your most important reasons for leaving the organization?

Figure G.2a, Figure G.2b, and Figure G.2c present the top 10 most frequent unigrams, bigrams, and trigrams, together with their matched correlation heatmaps, based on turnover employees’ responses to Question 3: “What were your most important reasons for leaving the organization?” Eight themes of 1. Compensation, 2. Immediate Supervisor, 3. Senior Leadership, 4. Job Duties, 5. Growth Opportunities, 6. Workload, 7. Communication, and 8. Personal Reasons were identified.

Here is a summary of each of the eight themes. First, compensation was the most frequently cited reason for leaving, with employees reporting low wages and (internal and external) pay inequity. Second, issues with immediate supervisors included feeling undervalued, unfair and unprofessional behavior, poor communication, being ignored when seeking support, and favoritism. Third, senior leadership was viewed as disconnected and unresponsive, showing favoritism, failing to address concerns, and fostering environments of low trust. Fourth, job duties were often misaligned with employees’ skills or expectations, marked by unclear roles, shifting responsibilities, and lack of recognition. Fifth, growth opportunities were limited, leaving employees without clear career paths and limited promotion. Sixth, workloads were excessive and unpredictable, disrupted family life. Seventh, communication problems included unclear expectations, inconsistent messaging, and lack of transparency, undermining trust and productivity. Finally, personal reasons such as retirement, family needs, health issues, relocation, and career changes also influenced employees’ decisions to leave. The details of each theme’s analysis are provided below.

4.3.3.1 1. Compensation. High-frequency unigrams such as “pay” (frequency: 50) and “compensation” (frequency: 21), along with bigrams like “better pay” (frequency: 6) and “make money” (frequency: 4), and trigrams such as “higher paying job” (frequency: 2) and “compensation growth opportunity” (frequency: 2), reflected widespread concerns about compensation. These concerns included low wages, internal pay inequity, and external pay inequity. Many respondents voiced frustration

over low wages, such as “Our wage is terrible” and “I couldn’t afford to feed my family on the salary I made.” Others pointed to internal pay inequity. For example, one employee thought that the starting salary for new engineers was inadequate. Some noted external pay inequity, such as “I couldn’t turn down a 60% salary increase” and “I’m leaving for \$70,000 a year doing less work—that’s about \$20,000 more.”

4.3.3.2 2. Immediate Supervisor. Unigrams such as “employee” (frequency: 23) and “management” (frequency: 6), along with bigrams like “upper management” (frequency: 5) and “immediate supervisor” (frequency: 4), revealed frequent dissatisfaction with leadership. This section focuses specifically on immediate supervisors, as many employees’ experiences with their direct managers included undervalued, unfair and unprofessional behavior, poor communication, being ignored when seeking support and favoritism. One employee shared, “Immediate supervisor feels I am worthless to him,” while another noted, “Supervisors not being honest or fair ... certain employees always take precedence over others despite having the same title.” Several respondents mentioned unprofessional behavior or poor communication, with comments such as, “My supervisor had a ... arrogant attitude and was very difficult to work with,” and “I don’t think my supervisor was polite or effective—her communication was frustrating.” Others described being ignored when seeking support. For example, one person wrote, “When I tried asking my supervisor for help, he cut me off before I could even explain.” There were also repeated references to favoritism, with comments like “I felt only certain people would be given opportunities for advancement,” and “One crew leader harassed employees and management turned a blind eye because they were friends.”

4.3.3.3 3. Senior Leadership. Concerns about senior leadership were prevalent in employee response comments, with the bigram of “upper management” (frequency: 5) and the unigram of “management” (frequency: 6) underscoring dissatisfaction with leadership, including both immediate supervisor and senior leadership. This section analyzes concerns regarding senior leadership by combining employees’ raw comments. These concerns included poor management skills, a lack of concern for employees’ growth, poor communication, inaction on employees’ comments, and lack of trust. Employees described upper leadership as having poor management skills. For example, one employee mentioned, “The operations manager’s lack of people skills.” Another noted that upper leadership did not care about employees’ growth. For example, one person said, “Upper management makes decisions that don’t foster growth or motivation.” Several respondents criticized poor communication from senior leaders and noted that they did nothing regarding employees’ comments, with comments like “A reorg started, but nothing was clearly communicated—projects were put on hold and we were left in the dark,” and “Executive leadership didn’t listen. Even when we voiced concerns, nothing changed.” Issues of toxic environments were attributed to upper-level leadership: “some managers created toxic environments.” Another respondent mentioned “Lack of trust in senior.”

4.3.3.4 4. Job Duties Unigrams such as “work” (frequency: 40), combined with themes from employees’ comments, reflected concerns about job role alignment and clarity. Many respondents described a mismatch between their training and their assigned responsibilities, such as “The sections assigned to me are not related to my training” and “Being asked to perform snow plowing sections as a land surveyor is demoralizing.” Others pointed to unclear or frequently shifting expectations. For example, one person wrote, “Constant change in job duties was based on one individual deciding things without communication.” Some also noted that job titles did not reflect actual work performed, such as “Job titles don’t match the work being performed—I had a fancy title without the responsibilities to match” and “There was no recognition of the work I did. I was always doing more than what was listed in the job description.”

4.3.3.5 5. Growth Opportunities. Unigrams such as “work” (frequency: 40) and “opportunity” (frequency: 28), as well as the bigram “growth opportunity” (frequency: 5), highlighted concerns about growth opportunities, emphasizing the lack of unclear career pathways and limited promotion. Many employees described unclear career pathways for promotion and professional development, such as “I have worked here for years with no clear path for advancement” and “On paper, I was qualified to take a higher PM position, but a spot had to open up rather than promoting within the role.” Correlations between “better” and “opportunity” ($r = 0.2$) and between “growth opportunity” and “better pay” ($r = 0.2$) further indicated that employees often linked career development to financial advancement. Respondents also expressed frustration with limited promotion opportunities. For example, one respondent commented that “I felt like I was never going to be able to move up.”

4.3.3.6 6. Workload. Concerns about workload were prominent, with frequent mentions of “work” (frequency: 40) and “hour week” (frequency: 5). Many respondents emphasized the strain of excessive hours, heavy workloads, and disrupted family life. For example, one employee commented, “The long work hours leave little time for personal life,” and another stating, “I was working 50+ hours a week.” A correlation between “hour week” and “room growth” ($r = 0.2$) reflected how heavy workloads were often compounded by the lack of promotion, adding to employee dissatisfaction, with comments like “Pay increase, work load with no option of overtime pay, and no promotion opportunities,” and “Working a lot of hours plowing.” Several participants described how demanding work schedules disrupted family life, with comments like “I couldn’t spend time with my kids during plowing season” and “Being away from family three to four nights a week was too much.”

4.3.3.7 7. Communication. Communication issues, closely tied to leadership concerns, were reflected in unigrams such as “employee” (frequency: 24), “management” (frequency: 23), and “lack” (frequency: 22). Many respondents described a lack of clear and effective communication, such as “Lack of clear communication hinders productivity” and “Communication and support could have been better throughout the organization.”

The correlation between “immediate supervisor” (frequency: 4) and “lack communication” (frequency: 4) ($r = 0.2$) underscores the negative impact of poor supervisory communication, comments like “Clearer communication from management would reduce misunderstandings” and “My immediate supervisor was very difficult to work with and had poor communication.”

4.3.3.8 8. Personal Reasons. Individual circumstances and life changes were categorized under Personal Reasons. This theme was reflected in high-frequency unigrams such as “retirement” (frequency: 22) and the bigram “time retire” (frequency: 6). Many employees cited natural career endings after long service, with one noting, “After nearly 40 years of service, it was time to retire and do other things while I still can.” Others referenced personal or family needs as key factors influencing their decision to leave. One respondent stated, “I couldn’t afford to feed my family on the salary I made,” while another shared, “My disabled husband can no longer stay at home by himself, and it’s the right thing to do.” Childcare was also a common concern, as reflected in the comment, “My most important reason for leaving INDOT is so that I am able to be at home with my daughter until she is school age.” Additional reasons included pursuing higher education. For example, one person wrote, “I figured now would be a good time to leave and pursue a career that’s closer to my degree ...” Relocation due to operational changes was also cited. For example, one person wrote, “Brimfield unit is moving to Lagrange and it’s too much of a drive for me.”

4.3.4 Question 4: What recommendations do you have to make the organization a better place to work?

Figure G.3a, Figure G.3b, and Figure G.3c present the top 10 most frequent unigrams, bigrams, and trigrams, together with their matched correlation heatmaps, based on turnover employees’ responses to Question 4: “What recommendations do you have to make the organization a better place to work?” Five themes of 1. Compensation, 2. Resources, 3. Immediate Supervisor, 4. Culture, and 5. Communication were identified.

Here is a summary of each of the five themes. First, compensation was the top concern, with low wages and external pay inequity. Second, resource needs centered on better health insurance, more hands-on and standardized training, and greater support for employees with families. Third, issues with immediate supervisors included insufficient guidance, poor leadership practices, and a need for more effective supervisor training. Fourth, culture concerns involved favoritism, lack of transparency, toxic behaviors, and a desire for more fairness, respect, and recognition. Finally, communication was seen as lacking, with employees urging clearer updates, stronger information sharing, and better coordination across departments. The details of each theme are listed below.

4.3.4.1 1. Compensation. High-frequency unigrams such as “pay” (frequency: 61), along with bigrams like “better pay” (frequency: 11) and “employee pay” (frequency: 3), and trigrams such as “cost living raise” (frequency: 2) and “provide

livable wage” (frequency: 2), underscored widespread concern over low wages. The correlation between “better” and “pay” ($r = 0.3$) further reinforced the strong sentiment for improved compensation. For example, one employee wrote, “Increase wages for workers. Provide a livable wage.” Many employees explicitly expressed concerns about the low wages and external pay inequity, such as “Pay highway workers better so they don’t have to struggle to pay their bills” and “Only for them to leave after they get their CDL because the pay is better elsewhere.”

4.3.4.2 2. Resources (Training and Medical Insurance). The unigram “training” (frequency: 22) and the bigram “better training” (frequency: 4) frequently appeared in responses, highlighting concerns related to resources such as insufficient training and lack of insurance. Many employees emphasized the need for more hands-on, structured learning experiences. One respondent stated, “More in-person trainings within the Construction department—Teams meetings make it harder to truly engage with peers and learn,” while another added, “Set a standard of training, your model of training is not working.” Beyond training, respondents also raised concerns about employee benefits, particularly health insurance. One employee noted, “The medical insurance seems to shame smokers—the difference between non-smokers and smokers is high.” Others commented: “Benefits package needs to be more traditional—even if it is high deductible, i.e., copay structure needs to be used for routine services.” Resource-related concerns were also directly tied to morale and retention. For example, one employee shared, “Offer day care or leniency for those who have kids and cannot make it to a plow shift on time... being on call with a family and not having childcare is stressful.”

4.3.4.3 3. Immediate Supervisor. Concerns regarding immediate supervisors were frequently mentioned in employee feedback. High-frequency unigrams such as “manager” (frequency: 21) and the bigram “crew leader” (frequency: 6) pointed to concerns related to immediate supervisor, including guidance for employees and better supervisor training. Many respondents felt supervisors should take a more active role in guiding employees, such as “Crew leaders should be on the ground out of trucks all day, every day, training new employees—not just sitting back” and “Train your supervisors to be leaders—not just a boss with a title.” Others emphasized the need for better supervisor training. For example, one person wrote, “Some supervisors are not made to be supervisors—maybe train people who are, and what it takes.”

4.3.4.4 4. Culture. The unigram “work” (frequency: 56) and the bigram “great place” (frequency: 5), combined with employee comments, highlighted concerns related to workplace culture, including transparency and trust, favoritism and toxic behaviors, and recognition and respect. Many respondents emphasized the need for transparency and trust, such as “Open transparency for all divisions so anyone could ask about budgets, contracts, and future changes” and “Create a psychologically safe space with diversity and fairness.” Concerns about favoritism and toxic behaviors also emerged. For example, one

person wrote, “Stop favoritism—let someone move up without having to apply,” along with suggestions to address employees whose behavior affects team cohesion and morale. Others called for more respect and recognition, such as “Treat everybody the same, regardless of who they know” and “as ‘Recognize hard work and promote those who deserve it.’” Statements like “Keep the culture based on respect—no bullying” reinforced the desire for a respectful workplace culture.

4.3.4.5 5. Communication. Communication was frequently identified as a critical area for improvement, with the unigram “communication” (frequency: 30) and the bigram “better communication” (frequency: 8) appearing often in employee feedback. These findings indicate concerns related to communication, including information sharing and communication improvements. Employees described gaps in information sharing, such as “Nobody talks to each other, and nobody knows what’s going on half the time” and “Improve communication between the shop and units when equipment issues arise.” Others offered specific communication improvement, such as “Conduct regular meetings to keep everyone informed,” and “Ensure clear dissemination of updates across all levels.”

4.3.5 Question 5: If you know of any compliance or integrity issues that have not been addressed with the organization (e.g., improper, unethical or unlawful behavior), please explain

Figure G.4a, Figure G.4b, and Figure G.4c present the top 10 most frequent unigrams, bigrams, and trigrams, together with their matched correlation heatmaps, based on turnover employees’ responses to Question 5: “If you know of any compliance or integrity issues that have not been addressed with the organization (e.g., improper, unethical or unlawful behavior), please explain.” Five themes of 1. Immediate Supervisor, 2. Senior Leadership, 3. Job Duties, 4. Culture, and 5. Job Security were identified.

Here is a summary of each of the five themes. First, the immediate supervisors theme was marked by reports of poor treatment of staff, lack of engagement, retaliation, and unprofessional conduct, with some employees calling for stronger accountability. Second, senior leadership was described as unresponsive and self-interested, often ignoring employee concerns, failing to act on complaints, and prioritizing their own interests. Third, job duties were seen as inconsistently managed, with unclear communication, unbalanced workloads, and occasional safety lapses contributing to confusion and frustration. Fourth, cultural concerns centered on favoritism, bias, lack of respect, and ineffective complaint-handling processes, which undermined fairness and trust. Finally, job security concerns involved perceptions of unfair terminations, personal bias in firing decisions, and fears of forced resignations. The details of each theme are provided below.

4.3.5.1 1. Immediate supervisor. Immediate supervisor issues were prominent, with frequent mentions of unigrams such as “supervisor” (frequency: 23) and “crew” (frequency: 13). These bigrams like “previous supervisor” (frequency: 5),

“supervisor assigned” (frequency: 3), “direct report” (frequency: 2), and the trigram of “supervisor come job” (frequency: 2) pointed to widespread dissatisfaction with supervisors’ behavior, including poor treatment of staff, lack of engagement, retaliation, and unprofessional conduct. Employees described concerns about how supervisors treated staff. For example, one respondent stated, “My boss talks to me however she wants to (rudely and improper),” while another noted, “Supervisor telling me to my face that the experience I was hired for doesn’t count for anything in this position.” Others cited lack of engagement. For example, one person wrote, “The supervisor would show up in the morning to tell us what to do and then not show back up until the end of the day.” Additional comments revealed concerns about retaliation or unprofessional conduct. For example, one person wrote, “I was forced to resign and not given written information why... I wasn’t treated fairly or properly by my most recent supervisor.”

4.3.5.2 2. Senior Leadership. Concerns about senior leadership were widespread. Some unigrams like “supervisor” (frequency: 23), “leader” (frequency: 10) appeared in leadership contexts, reflecting the concerns about leadership. This section analyzes concerns regarding senior leadership by combining employees’ raw comments, with many complaints particularly involving upper management’s lack of care for employees, issues with HR, and failure to act on employee feedback. For instance, one noted, “There are so many titles and not enough of them care about” the employee who “is trying to make a better life.” Another employee commented, “I sent an email to HR before I left detailing the discriminatory ... Nothing was done.” A third employee described, “Upper management knew of issues and did nothing about it.”

4.3.5.3 3. Job Duties. Concerns about job duties were frequently raised, particularly around lack and inconsistency of feedback, unclear communication, unbalanced assignments, and safety issues. Respondents noted that tasks were often assigned without proper monitoring or feedback, such as “Supervisors would delegate Sections in the morning but rarely check on progress during the day,” and another saying, “Boss comes to the job site, says it looks good—two days later tells people it looks bad.” Others emphasized the lack of clear and timely communication on assignments. For example, one person wrote, “Supervisors often withheld important information, leading to avoidable problems later.” The strong correlation between “direct report” and “supervisor assigned” ($r = 1$) further indicated concerns related to assignments and management. As one employee noted, assignments can sometimes be light and easy, while at other times be heavy; this imbalance needs to be addressed. There were additional concerns about safety. One employee stated, a crew leader “would go out by himself and fix holes without any protection,” and crew leaders ignored safety protocols sometimes.

4.3.5.4 4. Culture. Unigrams such as “issue” (frequency: 18), “people” (frequency: 17), and “HR” (frequency: 15) frequently appeared in responses. Bigrams such as “chain command”

(frequency: 2) and “bragged employee” (frequency: 2) indicated concerns related to workplace culture, including favoritism, flawed complaint-handling processes, lack of respect, and unethical leadership behavior. Many respondents described favoritism, such as “Favoritism leads to some workers getting lighter sections while others are burdened with harder assignments,” and “Supervisors show favoritism, creating resentment among employees.” The strong correlation between “HR” and “issue” ($r = 0.5$), between “leader” and “crew” ($r = 0.9$), and between “employee” and “HR” ($r = 0.4$), suggested that both complaint-handling processes and frontline leadership play a central role in shaping workplace culture. For instance, one respondent stated, “I contacted HR about a hostile environment and age discrimination, but no action was taken,” and another noted, “I tried to call HR and left a message and never heard anything back.” Some comments indicated a lack of respect. For example, one person wrote, “New people do NOT get the respect that they deserve in some of the Sub districts.” Many respondents reported instances of poor or unethical leadership behavior. For example, one responded mentioned “Unethical comments and lack of respect from leaders damage workplace morale,” while another shared “Many unethical comments have been made by ... operations managers.”

4.3.5.5 5. Job Security. Employee feedback revealed significant concerns about job security, particularly regarding termination practices and job stability. Several respondents felt they lost their jobs unfairly or without clear justification. For example, one person wrote, “I was forced to resign and not given written information about why.” Others described terminations they believed were unjustified or influenced by personal bias, such as “I literally did nothing wrong and got fired,” and “firing being personal and not on any merit of poor performance.”

4.3.6 Question 6: Is there anything else you would like to add?

Figure G.5a, Figure G.5b, and Figure G.5c present the top 10 most frequent unigrams, bigrams, and trigrams, together with their matched correlation heatmaps, based on turn-over employees’ responses to Question 6: “Is there anything else you would like to add?” Five themes of 1. Immediate Supervisor, 2. Growth Opportunities, 3. Workload, 4. Culture, and 5. Emotional Complexity were identified.

Here is a summary of each of the five themes. First, concerns about immediate supervisors were common, with reports of disrespect, inaction, unethical behavior, and favoritism, though some employees described positive leaders. Second, limited growth opportunities led to frustration over career stagnation, despite appreciation for the experience gained. Third, heavy workloads and long hours contributed to burnout and dissatisfaction. Fourth, many praised INDOT’s culture, citing teamwork, collaboration, and pride in serving the public. Finally, emotional ambivalence emerged as employees expressed gratitude for their time at INDOT but noted unresolved issues such as lack of recognition, workload demands, or low wages. The details of each theme analysis are provided below.

4.3.6.1 1. Immediate supervisor. Concerns about immediate supervisors were frequently mentioned. The unigram of “supervisor” (frequency: 19) and the bigram of “crew leader” (frequency: 10) reflected concerns about immediate supervisor. Employee feedback on immediate supervisors was often negative, citing disrespect, inaction, unethical behavior, and favoritism, though some employees reported having positive leaders. First, multiple respondents described their immediate supervisors as disrespectful or unwilling to address problems. One respondent described experiencing a high level of perceived disrespect and mistreatment from their unit supervisor, and another employee commented, “The supervisor can handle it; they choose not to.” Others cited unethical behavior. For example, one person wrote, “The unit foreman... would blatantly lie to his workers just so that things would look favorably upon him.” Favoritism also emerged as a repeated issue. One respondent suggested that department leadership should receive training on treating all employees fairly, and another wrote, “Supervisors show favoritism, creating resentment among employees.” In contrast, some employees shared positive experiences with immediate supervisors, such as, “My direct supervisor and my head supervisor in traffic were very down to earth and great to work for.”

4.3.6.2 2. Growth Opportunities. Limited opportunities for advancement were revealed through the bigram of “opportunity work” (frequency: 6) and the trigram of “decision leave hardest” (frequency:2), pointing to growth opportunities as a reason for exit. One participant shared that he loved to learn but had no chance to do so, explaining that even after five years he still did not know how to operate a skid steer. Another employee noted, “I guess I’m willing to come back if the right position was offered to me. Other than not being able to move up I really enjoyed working for INDOT.”

4.3.6.3 3. Workload. Heavy workloads and insufficient rest were recurring themes, with high-frequency unigrams such as “time” (frequency: 32) and “place” (frequency: 23), along with correlations between “work” and “time” ($r = 0.3$) and “work” and “year” ($r = 0.2$). These associations suggested that time-intensive demands contributed significantly to dissatisfaction. For example, one employee stated, “After working 38 days straight with snow and ice, I was forced to patch holes for three more 12-hour shifts. I knew I was done at INDOT.” Another also wrote, “I worked for INDOT for 26 years, but the workload and lack of appreciation made it difficult to stay.”

4.3.6.4 4. Culture (Positive Work Environment and Collaboration). Many employees expressed strong appreciation for INDOT’s work culture, especially around collaboration and shared purpose. The bigram of “great place” (frequency: 8) and the trigram of “great place work” (frequency:7), along with high-frequency unigrams like “work” (frequency:72), “great” (frequency:32), and “people” (frequency:42), highlighted a sense of pride and belonging. Statements such as “INDOT is truly a great place to work,” and “The people there want to do good work and understand they are getting it done,” reflected a

team-oriented spirit. The correlation between “work” and “people” ($r = 0.2$), and between “great” and “place” ($r = 0.3$), further reinforced that positive relationships and shared mission were central to many employees’ favorable experiences.

4.3.6.5 5. Emotional Ambivalence. Emotional Ambivalence emerged as a notable theme in responses. Employees frequently expressed gratitude for their time at INDOT while they also acknowledged unresolved frustrations, as reflected in the trigram of “enjoyed my time” (frequency: 3) and the unigrams such as “enjoyed” (frequency:20) and “time” (frequency:32). Comments like, “I enjoyed my time at INDOT, but the lack of recognition made it hard to stay” and “I enjoyed working for INDOT. The good outweighed the negative for the most part.” And another employee commented, “I would have loved to stay working for INDOT, the pay just wasn’t enough.” These findings showed that while many expressed appreciation for the organization, factors such as workload or compensation shaped their decisions to leave.

4.3.7 Conclusion of The Analysis Results from Q1 To Q6

This section combines and evaluates the results from Questions 1 through 6, focusing on the frequency and significance of key themes contributing to employee retention and turnover. The analysis identifies recurring themes and categorizes them into high, mid, and low-impact levels based on their frequency across the six questions. This structured approach highlights areas requiring organizational attention.

Themes with higher frequencies across multiple questions mean these themes were mentioned more frequently as concerns from departing employees, while those with lower frequencies indicate areas with less concern. The results are summarized in Table 4.2, showing the themes identified for each question.

After listing the theme present in each question, Table 4.3 summarizes the total number of themes appearing across all questions. A higher number indicates high-impact themes

TABLE 4.2
The Summary of Themes From Q1 to Q6.

Themes	Q1	Q2	Q3	Q4	Q5	Q6
Compensation		X	X	X		
Immediate Supervisor	X	X	X	X	X	X
Senior Leadership		X	X		X	
Job Duties	X	X	X		X	
Growth Opportunities		X	X			X
Schedule	X	X				
Workload			X			X
Culture		X		X	X	X
Communication			X	X		
Job Security					X	
Expectations vs. Reality	X					
Personal Reasons			X			
Resources	X			X		
Emotional Ambivalence						X

Note: “X” indicates that a theme is present in a corresponding question, as determined by the NLP analysis.

TABLE 4.3
Summary of Themes and Their Impact Levels on Employee Turnover.

Impact Level	Themes	Frequency
High-Impact Theme that Appeared in All Six Questions	Immediate Supervisor	6
Mid-Impact Themes that Appeared in 3–4 Questions	Job Duties	4
	Culture	4
	Compensation	3
	Senior Leadership	3
	Growth Opportunities	3
Low-Impact Themes that Appeared in Less than 3 Questions	Resources	2
	Schedule	2
	Workload	2
	Communication	2
	Job Security	1
	Expectations vs. Reality	1
	Personal Reasons	1
	Emotional Ambivalence	1

contributing to employee turnover because the higher frequency that they showed up across multiple questions, while a lower number suggests low-impact themes.

The analysis reveals that Immediate Supervisor is the most consistently cited theme, appearing in all the six questions, underscoring its critical influence on employee experience. Mid-impact themes such as Job Duties, Culture, Compensation, Senior Leadership and Growth Opportunities appeared in multiple questions (3 or 4), indicating they have some impact on employee turnover. Low-impact themes such as Resources, Schedule, Workload, Communication, Job Security, Expectations vs. Reality, Personal reasons, and Emotional Ambivalence were mentioned less frequently (1 or 2) but still represent meaningful areas for improvement. In summary, the results point to leadership, especially for immediate supervisor, as the most pressing area for improvement. Addressing these challenges, along with enhancing Job Duties, Growth Opportunities, Compensation, Culture and other low-impact themes, will be essential to strengthening employee retention and satisfaction at INDOT.

4.4 Textual Data Analysis Based on Different Demographic Groups

This section focuses on analyzing workforce textual data based on demographic groups. By segmenting the data into distinct demographic groups, such as age, ethnicity, highest education level, gender, and district location, NLP techniques were applied to each group to consolidate textual data and identify key themes influencing employee turnover across different demographic groups. Word clouds were generated in this study to visually highlight the high-frequency words mentioned in employees' comments, with larger text indicating greater frequency in the textual data. This approach provides tailored insights into how various workforce segments perceived their work environment to enable the development of more effective and targeted organizational strategies.

4.4.1 Textual Data Analysis Based on Age Group

Textual data were analyzed across five age groups (Under 30, 30–39, 40–49, 50–59, and 60 and Over) to better understand differences in employee concerns and perceptions. The word clouds were shown in Figure 4.30, where larger text indicated higher-frequency words mentioned in employees' responses. Among employees under 30, words such as supervisor, pay, employees, and communication played an important role as shown in Figure 4.30a. In the 30–39 age group, prominent words included better, team, management, and position as shown in Figure 4.30b. For those aged 40–49, frequent mentions of state, need, opportunity, and organization highlighted growing concerns related to these issues as shown in Figure 4.30c. Among employees aged 50–59, the word cloud showed emphasis on supervisor, training, better, and communication as shown in Figure 4.30d. Finally, for the 60 and over group, words such as year, pay, retirement, training, and return dominated as shown in Figure 4.30e. Across all age groups, pay remained a consistent concern, but the high frequency words varied, shifting from communication and fairness among younger workers to long-term stability and recognition among older employees.

4.4.2 Textual Data Analysis Based on Ethnic Group

In this section, only Black and White employees were included in the analysis, as other ethnic groups had fewer than 10 responses, making the sample size insufficient for meaningful interpretation. Textual data was analyzed for these two primary ethnic groups to identify group-specific concerns and workplace perceptions, with the word clouds shown in Figure H.1. Across both groups, shared concerns emerged around pay, position, and employees. However, differences in emphasis revealed distinct priorities within each group. Among Black employees, frequently mentioned terms included organization, compensation, training, higher, and opportunity, as shown in Figure H.1a. Additional terms such as diverse, help, and support also appeared prominently. In contrast, White employees placed more emphasis on supervisor, manager, unit, year, working, and need, as shown in Figure H.1b. While both groups identified training and management as important areas, Black employees appeared to focus more on concerns related to compensation and career opportunities, whereas White employees were more likely to raise issues related to supervision and working conditions. These findings underscored the importance of considering different ethnicities when designing retention strategies, ensuring that both shared and group-specific priorities are addressed in a meaningful and inclusive manner.

4.4.3 Textual Data Analysis Based on Highest Education Level

In this section, only employees with the highest education levels of HS Graduate or Equivalent, Some College, Technical School, Associate Degree, Bachelor's Level Degree, and Master's Level Degree were included in the analysis, as other education level groups had fewer than 10 responses, making the

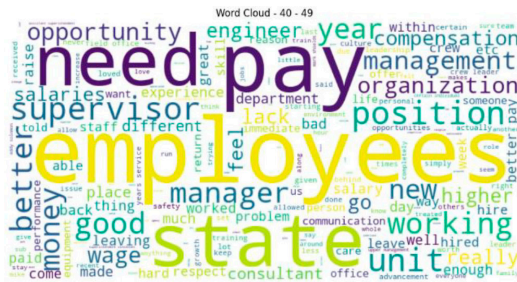


Figure 4.30 Word Cloud of Responses by Age Group.

sample size insufficient for meaningful interpretation (Chang et al., 2023). Textual responses were categorized by the highest education level to examine how workplace concerns vary by educational attainment. The word clouds shown in Figure H.2 represented education levels from HS graduate to master's degree. Across all groups, terms like pay, position, and employees consistently appeared. Employees with a high school diploma or equivalent frequently used terms such as unit, need, money, issue, and working, as shown in Figure H.2a. Those with some college experience emphasized pay, better, training, and manager, as shown in Figure H.2b. Technical school graduates highlighted terms like equipment, shop, return, and crew, pointing to operational needs and equipment-related frustrations, as shown in Figure H.2c. For employees with an associate degree, common terms included supervisor, truck, district, and training, as shown in Figure H.2d. Employees holding a bachelor's degree frequently mentioned training, contract, project, and opportunity, as shown in Figure H.2e. Finally, those with a master's degree expressed concerns with salary, staff, organization, and consultant, as shown in Figure H.2f. Overall, these

suggested that as education level increased, employee concerns shifted from operational (e.g., truck, equipment) and supervisory (e.g., supervisor, manager) matters to professional development themes like advancement (e.g., opportunity, training) and leadership (e.g., organization, supervisor).

4.4.4 Textual Data Analysis Based on Gender

Textual responses were analyzed based on gender, focusing on male and female employees. These groups had sufficient sample sizes for meaningful interpretation, with the word clouds shown in Figure H.3. Among male employees, frequently mentioned words included pay, better, employees, position, supervisor, and manager, as shown in Figure H.3a. Other common terms included unit, truck, equipment, crew, training, and experience. For female employees, high-frequency words included pay, position, need, department, year, and management, as shown in Figure H.3b. Additional terms such as family and respect also appeared in the responses. Overall, both male and female employees frequently mentioned pay and position.

male responses focused more on operational-related terms (e.g., training, equipment), whereas female responses included more organizational terms (e.g., department, employees) and personal needs terms (e.g., boss, home).

4.4.5 Textual Data Analysis Based on District Location

The word clouds for each INDOT district revealed both shared and location-specific workforce concerns, including Central Office, Crawfordsville, Fort Wayne, Greenfield, LaPorte, Seymour, and Vincennes, with the word clouds shown in Figure H.4. Across nearly all districts, including Central Office, Crawfordsville, Fort Wayne, Greenfield, LaPorte, Seymour, and Vincennes, common terms included pay, position, better, supervisor, and employees. Additional frequently mentioned words were manager, state, department, need, training, opportunity, and change. District-specific terms also appeared. In Central Office, common words included manager, position, organization, and need, as shown in Figure H.4a. In Crawfordsville and Fort Wayne, frequently mentioned terms were shop, truck, and construction, as shown in Figure H.4b and Figure H.4c. Greenfield and Seymour included crew leader, retirement, and higher, as shown in Figure H.4d and Figure H.4f. In LaPorte, key terms included contract, assigned, and call, as shown in Figure H.4e. Overall, the analysis identified common keywords across districts, such as pay and position, while also revealing unique high-frequency terms in each district that reflected localized concerns.

4.4.6 Summary

This section analyzes open-ended workforce comments through NLP, segmenting responses by key demographic variables of age, ethnicity, education level, gender, and district location. Using word clouds to visualize high-frequency terms, the analysis highlights both shared concerns and demographic-specific priorities related to turnover. The findings inform targeted retention strategies that are equitable and responsive to diverse employee needs.

- **Age group:** Comments across age groups revealed that while “pay” was a consistent concern across all cohorts, priorities shifted with age. Younger employees (under 30 and 30–39) emphasized terms like supervisor, communication, team, and better, reflecting concerns about support and collaboration. Employees in the 40–49 range mentioned state, opportunity, and organization, indicating mid-career employees’ concerns with career opportunity. Older groups (50–59 and 60+) frequently used words such as retirement, training, and return, pointing to retirement preparation, skill development.
- **Ethnic group:** Black and White employees shared concerns such as pay, position, and employees, but differing priorities emerged. Black employees highlighted organization, opportunity, compensation, training, and diversity, suggesting a focus on compensation, career advancement, and skill development. White employees were more likely to mention supervisor, manager, unit, and working, reflecting concerns about immediate supervision and daily work conditions.
- **Highest education level group:** Employees with higher education levels, compared to those with lower education levels, paid

attention not only to “pay” but also to leadership, project roles, and advancement. High school graduates and those with some college focused on money, unit, need, and working, indicating basic job satisfaction issues. Technical school and associate degree holders emphasized equipment, truck, crew, and training, reflecting operational challenges. Employees with bachelor’s and master’s degrees used terms like contract, organization, consultant, and opportunity, pointing to a greater focus on project roles, and improvement.

- **Gender group:** Male employees commonly cited pay, supervisor, equipment, crew, and truck, suggesting a stronger focus on field operations and management. Female employees also mentioned pay and position but added terms like department, respect, family, and management, reflecting more emphasis on support for personal needs and workplace culture.
- **District location group:** Across INDOT’s districts of Central Office, Crawfordsville, Fort Wayne, Greenfield, LaPorte, Seymour, and Vincennes, terms like pay, position, better, supervisor, and employees were widely reported, showing consistent organizational concerns across different district locations. However, district-specific words highlighted localized issues: Central Office employees focused on manager and organization; Crawfordsville and Fort Wayne mentioned shop, truck, and construction; Greenfield and Seymour highlighted crew leader and retirement; and LaPorte noted contract, assigned, and call. These variations suggested that while overarching concerns existed statewide, regional strategies should be developed to address localized operational needs.

While common concerns, especially pay and position, persisted across all groups, each demographic group revealed unique priorities shaped by age, ethnicity, education, gender, and location. Understanding these differences through textual analysis can enable INDOT to develop targeted, inclusive, and strategic retention efforts that address both shared frustrations and group-specific needs.

5. TASK C & D: SURVEY INSTRUMENT & TECHNICAL PROGRAM

5.1 Survey Design and Development

To gather data on INDOT’s workforce development needs, a structured Workforce Training Needs Survey was developed. The survey was the primary instrument for this gap analysis, carefully designed to cover multiple dimensions of employees’ work and training experiences. Key content areas and question themes were identified through preliminary discussions with INDOT’s Human Resources and Training officers, as well as a review of literature on transportation workforce development. The survey instrument consisted of sections addressing: (a) Demographics, (b) Job Satisfaction and Work Environment, (c) Training Participation and Preferences, (d) Training Needs and Barriers, (e) Skill Proficiency and Training Effectiveness, and (f) Organizational Support and Culture. Each section combined quantitative questions (Likert-scale or multiple-choice) and qualitative prompts (open-ended comments) to provide both breadth and depth in responses.

A conscious effort was made to align survey questions with the project objectives. For example, to assess skill gaps,

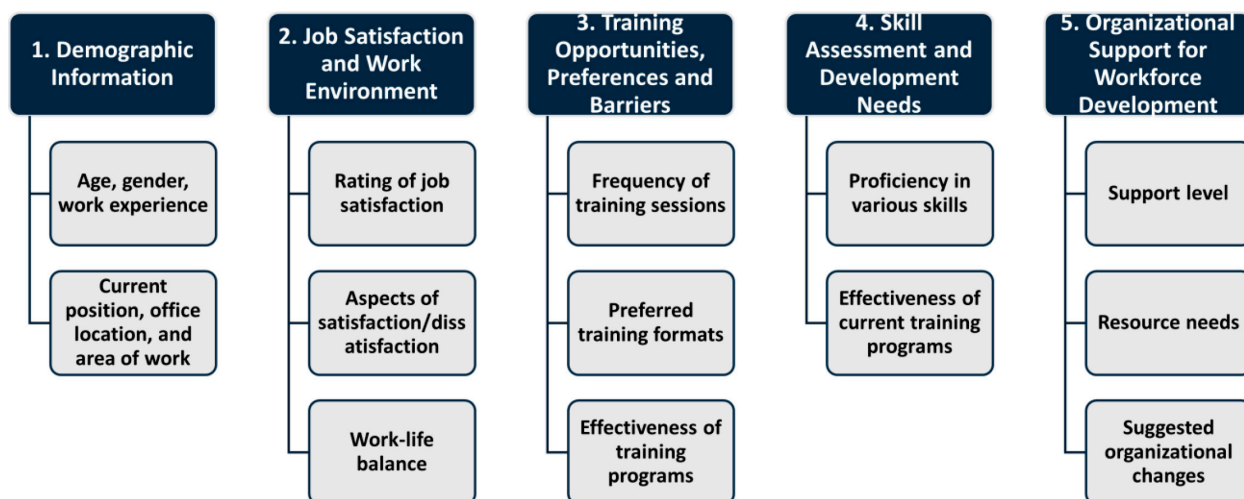


Figure 5.1 Overview of Survey.

the survey asked employees to rate their proficiency in key competency areas (such as technical skills, project management, communication, etc.) and also rate the effectiveness of INDOT’s current training in those areas. This enabled a direct computation of a “training gap” metric (effectiveness minus proficiency) for each skill area. To understand training barriers, the survey included a checklist question on common obstacles (with options like lack of time, course availability, management support, etc.) and allowed respondents to select all that apply. Before full deployment, the survey was pilot-tested on a small group of INDOT employees and researchers (approximately 10 individuals) to ensure clarity and relevance. Their feedback led to minor refinements in wording and the addition of one question about preferred training delivery format (online vs. in-person), which proved to be important in the results.

The survey was structured into five main sections, each targeting a specific aspect of workforce development (Figure 5.1). In Section 1: Demographic Information, respondents provided background details (such as age, gender, years of service, job role, and work location). This information establishes the context for understanding responses and ensures that the sample represents INDOT’s diverse workforce. Section 2: Job Satisfaction and Work Environment asked employees to rate their overall job satisfaction and to rank their satisfaction with various job aspects (e.g., work-life balance, career advancement opportunities, compensation, relationships at work). The goal was to gauge morale and pinpoint any job aspects that might be improved through training or other interventions.

In Section 3: Training Participation and Preferences, employees reported on their recent training experiences (number of training sessions attended, frequency of training) and their preferred formats for training (such as online, in-person, or a mix). This section also inquired how employees typically learn about training opportunities, shedding light on the effectiveness of INDOT’s current communication channels. Section 4:

Training Needs and Barriers directly addressed what training topics employees feel they need more of and what barriers prevent them from pursuing training. Employees could choose from a list of potential training topic areas (and add their own) and select all relevant obstacles (time, availability, etc.) that apply to them. Finally, Section 5: Skill Assessment and Organizational Support had a two-part focus: first, employees self-assessed their proficiency in key skill areas and the helpfulness of INDOT’s training in those areas (this is the basis for the skill gap analysis); second, they rated how well INDOT supports workforce development (e.g., whether INDOT encourages continuous learning, provides resources for training, and recognizes employees who develop new skills).

By covering these areas, the survey captures a holistic picture of workforce development at INDOT. It not only asks “Are employees satisfied?” but also “Why or why not?,” “What do they need to learn?,” and “What’s stopping them from learning?” The comprehensive design ensures that the subsequent analysis and recommendations are grounded in employee input and address both the supply side (training content and delivery) and the demand side (employee needs and motivation).

5.2 Survey Distribution and Collection

The finalized survey was delivered online (using a web-based survey platform, Qualtrics) to facilitate broad and efficient participation across INDOT’s geographically dispersed workforce. The target population included approximately 1,908 INDOT employees excluding field staff. An invitation email was sent from INDOT’s Workforce Development office to all targeted employees, explaining the purpose of the survey and assuring respondents of anonymity. Participants were given two weeks in November 2024 to complete the questionnaire, with one reminder sent halfway through the response window to encourage participation. Supervisors were requested to allow staff a small allotment of work time to complete the survey in order to mitigate the “lack of time” barrier.

By the close of the survey period, 386 responses were received, yielding a response rate of 20.2% of the targeted group. The 20% response rate is considered reasonable for an internal organizational survey of this nature, albeit with some response bias possible (for example, employees with stronger opinions on training (either positive or negative) might have been more motivated to respond). Once collected, the survey data were cleaned and analyzed using statistical software. Responses to closed-ended questions were summarized with descriptive statistics (frequencies, percentages, and mean scores as appropriate). Cross-tabulation by employee subgroup (e.g., comparing new hires vs. veterans) was done for select questions to see if perspectives differed notably, though for brevity most results in this report are presented in aggregate. Open-ended comments were thematically analyzed; these qualitative insights were used to contextualize the quantitative findings and are incorporated in the discussion where relevant (for example, quotes about specific training courses or suggestions for improvement).

5.3 Survey Results

5.3.1 Demographics

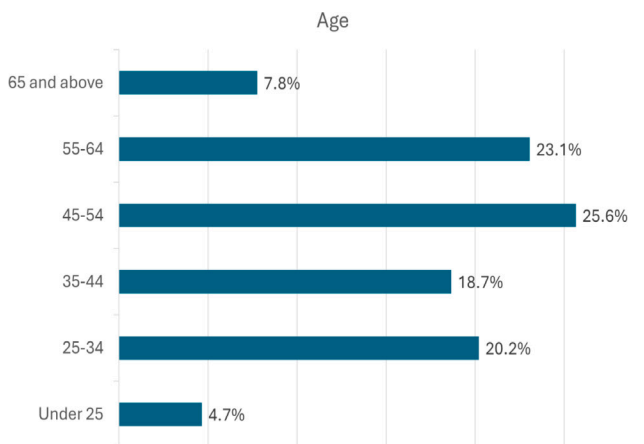


Figure 5.2 Age of Survey Respondents.

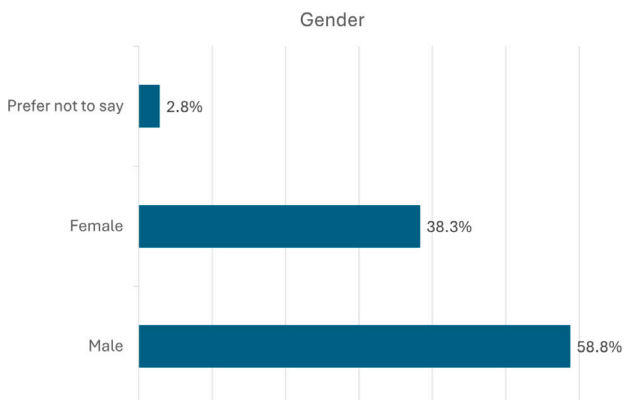


Figure 5.3 Gender of Survey Respondents.

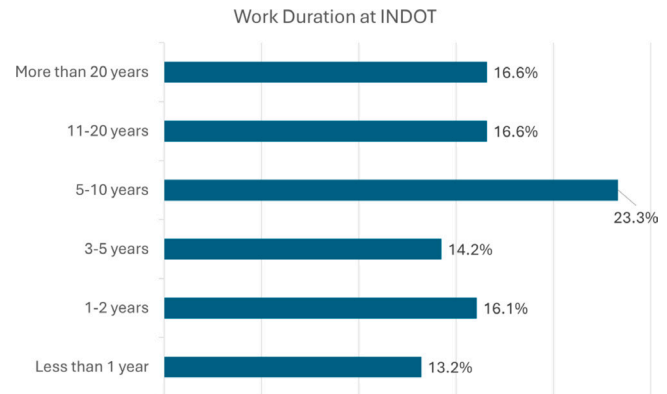


Figure 5.4 Work Duration of Survey Respondents.

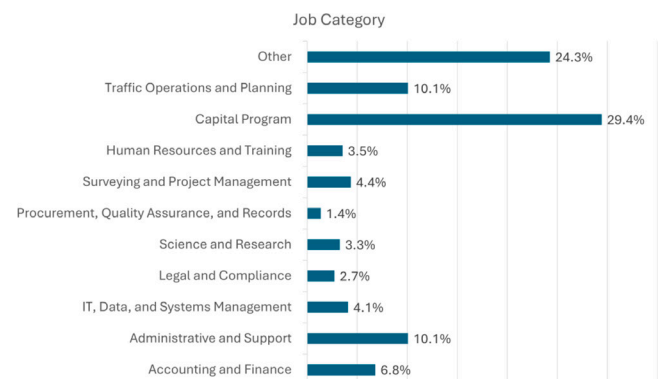


Figure 5.5 Job Category of Survey Respondents.

A total of 386 INDOT employees participated in the survey, roughly 20% of the targeted workforce for this study. Demographics shows that the respondents encompass a wide range of ages and experience levels. The largest age group in the sample is 45–54 years (about 25.6% of respondents), closely followed by those aged 55–64 (23.1%; Figure 5.2). Together, nearly half of the respondents are over 45 years old, reflecting an experienced workforce. Younger employees under 25 were the smallest group (~5%), with the remainder spread between 25 ~ 34 (20.2%) and 35 ~ 44 (18.7%). This age distribution suggests that INDOT's workforce skews older, which is typical for many DOTs, and highlights the importance of succession planning and knowledge transfer as a significant portion of staff approach retirement age.

In terms of gender, approximately 58.8% of respondents identified as male, 38.3% as female, and 2.8% preferred not to say (Figure 5.3). This indicates that while INDOT's workforce remains male-majority, female representation is substantial at nearly two-fifths. It underscores the importance of ensuring training and development programs are inclusive and supportive of a diverse workforce. Any gender disparities in training access or needs should be monitored, although none were immediately evident from the aggregated responses.

Tenure at INDOT among respondents varied widely, but there was a notable concentration of mid-career employees. The most common length of service was 5–10 years, reported by 23.3% of respondents (Figure 5.4). Additionally, a significant

share of employees have long tenures such as 16.6% reported 11 ~ 20 years, and another 16.6% have over 20 years of service. On the other end of the spectrum, about 13% have been with INDOT for less than 1 year, and 16.1% have 1 ~ 2 years. This bimodal pattern (many newer hires and many veterans, with fewer in the 3 ~ 5 years range) could be the result of recent hiring waves combined with long-term retention of older employees. It implies that INDOT's training program needs to cater simultaneously to onboarding new staff and to updating the skills of very experienced staff who may not have received formal training in recent years. Respondents represented a range of job categories, with "Capital Program" (29.4%) and "Other" (24.3%) accounting for the largest shares (Figure 5.5).

The broad distribution of ages and tenures in the respondent pool gives confidence that the survey results capture perspectives of both newer employees and seasoned personnel. Different demographic groups did show some differing priorities in open-ended comments (for example, newer employees often mentioned needing more fundamental training, whereas veterans emphasized updates on new technologies). However, all groups expressed a strong interest in continuous learning. This demographic snapshot sets the stage for understanding the following results: an experienced cohort that values development, a pipeline of newer employees hungry to build skills, and a notable upcoming retirement wave, all factors that influence what training strategies INDOT should pursue.

5.3.2 Job Satisfaction

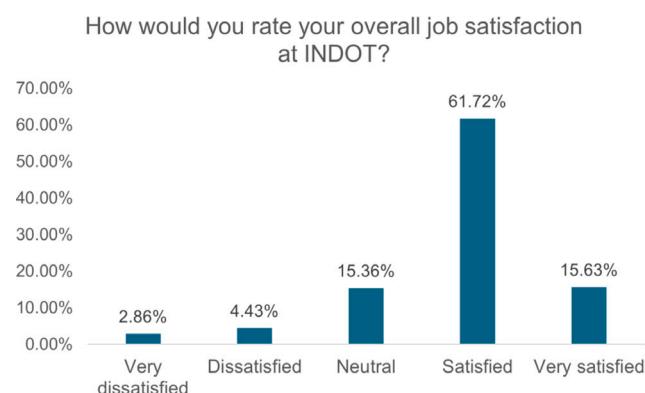


Figure 5.6 Job Satisfaction of Survey Respondents.

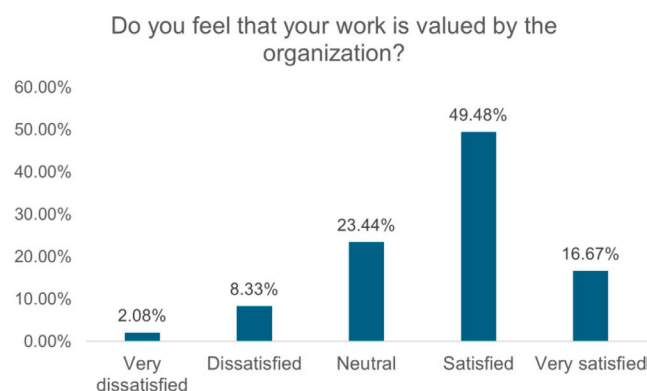


Figure 5.7 Level of Satisfaction Regarding Work Being Valued by the Organization.

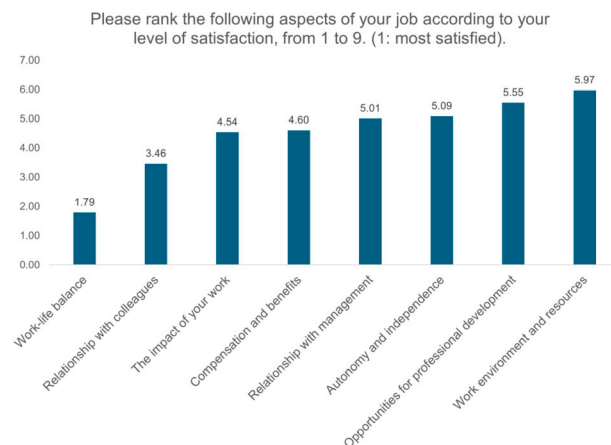


Figure 5.8 Ranking of Workplace Satisfaction Factors by Priority.

The survey revealed generally high job satisfaction among the workforce, with important nuances. Overall, 77.35% of respondents indicated they are either "Satisfied" or "Very Satisfied" with their job (61.72% Satisfied and 15.63% Very Satisfied; Figure 5.6). About 15% reported a Neutral stance, and only a small minority (roughly 7% combined) indicated being dissatisfied to some degree. This is a positive indication that, at a broad level, INDOT employees feel fairly content in their roles, which is a strength for the organization (a foundation upon which further improvements can build). Regarding whether their work is valued by the organization, 49.48% of respondents were satisfied and 16.67% were very satisfied (Figure 5.7).

However, when asked to rank their satisfaction with specific aspects of their job, respondents provided insights into which factors contribute to or detract from that overall satisfaction. "Opportunities for professional development" and "Work environment and resources" received the highest mean ranks, 5.55 and 5.97, respectively, indicating the lowest relative satisfaction among the listed job aspects on a scale where 1 represents the greatest satisfaction (Figure 5.8). This suggests that despite being generally satisfied with their jobs, employees feel that their opportunities to grow, advance, and have the resources for their work could be much better. In open-ended comments, employees noted things like "I love my work, but I feel there's no clear path for promotion" and "We often lack up-to-date equipment or training on new tools." Such sentiments align with the quantitative rankings.

On the other side, employees expressed highest satisfaction with their work-life balance and relationships at work. Work-life balance was frequently ranked as a top satisfier (many respondents gave it a 1 or 2 rank), indicating INDOT's policies or culture may be providing manageable workloads or flexible arrangements in many cases. Relationships with colleagues and supervisors were also commonly cited as positive aspects. This collaborative culture is a valuable asset for INDOT; it means that any new training initiatives can likely count on peer support and a positive environment for learning.

The implications of these job satisfaction findings for training are significant. The fact that career advancement

and professional development opportunities are a pain point (despite strong overall satisfaction) suggests that INDOT employees crave more growth and learning within the organization. It also implies that improvements in the training program (making it more relevant, visible, and tied to career progression) could have an outsized positive impact on morale. Conversely, high satisfaction with work-life balance signals that employees might be receptive to training that does not upset that balance. For instance, flexible online learning that can be done without extensive travel or overtime. This feedback guided the project team to focus on recommendations that strengthen career development pathways and improve resource availability, which are discussed later in the roadmap and recommendations sections.

In summary, INDOT's workforce is generally happy in their roles, but they are asking for clearer avenues to grow professionally and better resources/training to do their jobs effectively. Maintaining the already positive aspects (like supportive work culture and balance) while addressing those growth-related gaps is key to improving overall job satisfaction even further.

5.3.3 Training Preferences and Opportunities

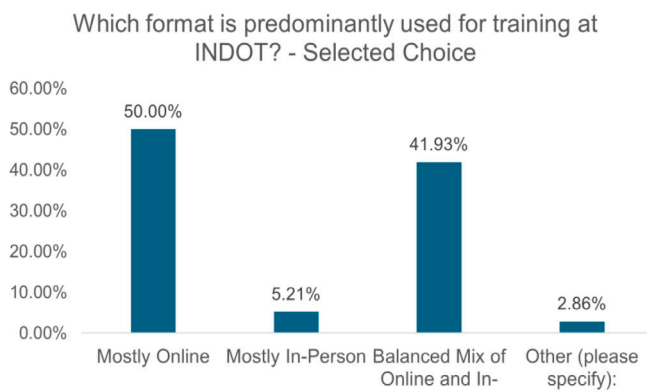


Figure 5.9 Distribution of Training Delivery Methods.



Figure 5.10 Information Sources for Training Programs.

The survey investigated how employees currently participate in training and how training delivery is implemented. A striking finding is the predominance of online formats in current practice. Half (50.00%) of respondents indicated that training at INDOT is delivered “Mostly Online” (Figure 5.9). Another 41.93% reported a “Balanced Mix of Online and In-Person.” In contrast, 5.21% reported “Mostly In-Person,” and approximately 2.86% chose “Other.” These figures describe current delivery, not stated preference. Even so, they indicate that more than 90% of training is conducted either mostly online or in a mixed format, which suggests broad feasibility and acceptance of online learning. The convenience and flexibility of online training likely appeal to staff spread across the state and those juggling fieldwork with coursework. In this context, expanding e-learning offerings (webinars, online modules, virtual classes) is operationally sensible, while preserving in-person elements where hands-on skills or networking are better served. A hybrid (blended) approach therefore appears ideal, leveraging efficient online content delivery while reserving face-to-face interactions for practice and discussion. A future survey item should directly measure format preference to validate demand.

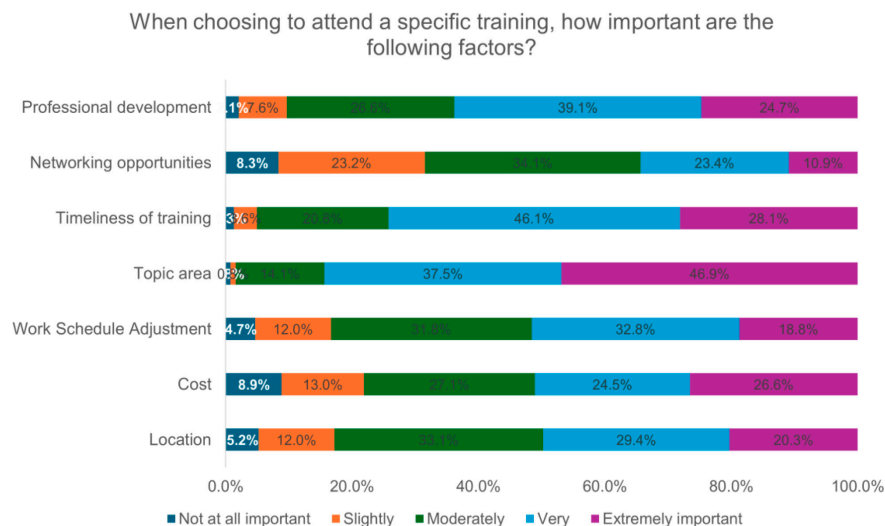


Figure 5.11 Relative Importance of Factors Influencing Training Attendance Decisions.

The survey also showed how employees learn about training opportunities, which relates to INDOT's internal communications effectiveness. Internal communications, such as emails or announcements, were the most frequently reported source of information about training opportunities, with a reported percentage of 33.87% (Figure 5.10). However, many respondents indicated that these communications are insufficient. In fact, the survey suggests there is low overall awareness of training opportunities: beyond official emails, information often travels via word of mouth (13.33%) or supervisor suggestions (15.07%), and a notable portion cited that they "do not hear about many opportunities at all." This indicates INDOT's training announcements might not be reaching or resonating with everyone. Several respondents wrote in comments that they accidentally learned of training events after the fact, or only heard about them if they happened to ask a colleague. Improving the visibility and frequency of training communications is needed. INDOT may consider more proactive strategies such as a dedicated training newsletter, posting opportunities on an intranet portal, or using text alerts (as seen in peer agencies) to reduce missed opportunities.

When it comes to factors influencing training selection, employees rated what they consider most important when deciding to attend a training. Topic area was the top consideration: 84.4% rated it Very or Extremely important (Figure 5.11). Timeliness of training was next (74.2% Very or Extremely important). Professional development opportunities were also highly rated (63.8% Very or Extremely important). These results indicate that employees are most motivated by content that directly addresses their work and is offered at convenient times. Networking, cost, and location were generally less important; many employees do not mind remote participation if the training content advances their work and skills. In practical terms, these preferences and responses suggest several actionable points for INDOT:

- Maintain and expand online and hybrid offerings. Given the predominance of online and mixed delivery and the high importance of timeliness, continuing to grow e-learning (while retaining targeted in-person components) is prudent. In future survey waves, add an explicit preference question to confirm demand for each modality.
- Enhance communication channels for training opportunities. Implement a systematic communication strategy (e.g., monthly training bulletins, a centralized training calendar, and an idea-sharing portal) so employees can easily find and suggest training.
- Design and advertise trainings to highlight content relevance and professional development value. Explicitly state which competencies a course will improve and link completion to badges or continuing education credits.
- Pay attention to timing and scheduling. Wherever possible, schedule training during off-peak periods or provide asynchronous modules that employees can complete at their own pace to ease time constraints.

In summary, INDOT's training is currently delivered primarily through online or blended formats, and employees engage most when the topic is relevant and timing is workable. While the survey did not directly measure format preference, the delivery patterns, importance ratings, and comments point to hybrid and online modalities as practical, scalable options. Future data collection should include explicit preference items to strengthen causal claims about demand.

5.3.4 Training Barriers and Needs

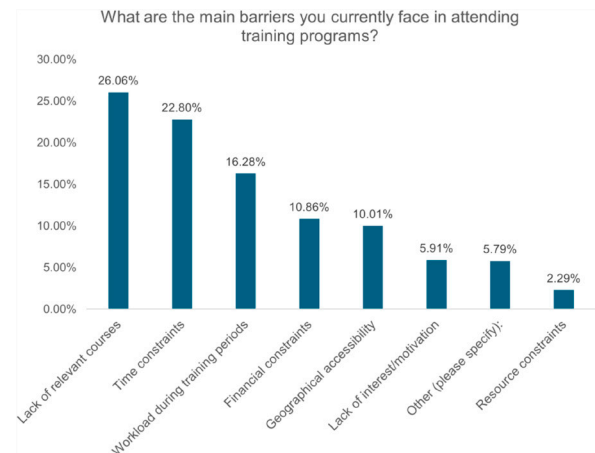


Figure 5.12 Principal Barriers to Attending Training.

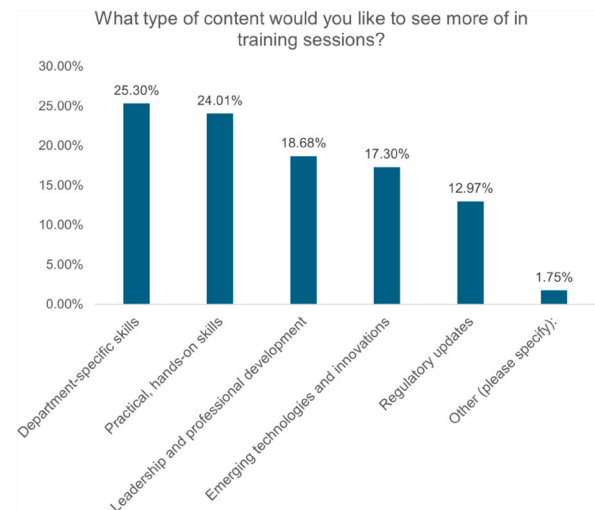


Figure 5.13 Preferred Training Content.

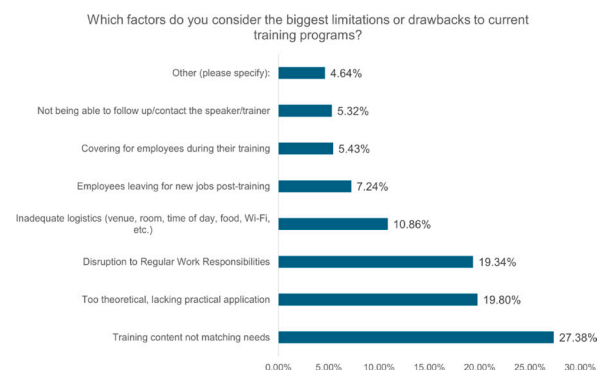


Figure 5.14 Primary Limitations of Current Training Programs.

The survey identified lack of relevant courses (26.06%) and time constraints (22.80%) as the most commonly reported barriers to attending training programs (Figure 5.12). The two most

requested types of training content were department-specific skills (25.30%) and practical, hands-on skills (24.01%; Figure 5.13):

1. **Department-Specific Skills (25.30%):** Over a quarter of respondents want more training tailored to the specific functions of their department or role. For example, employees in highway design desire courses on the latest design software or standards specific to Indiana, maintenance personnel seek training on new equipment or materials, etc. This indicates a hunger for training that is closely aligned with day-to-day job tasks and not just generic. Many comments echoed this, with respondents saying that some current trainings are “too general” and expressing preference for courses developed by or with input from INDOT subject-matter experts.
2. **Practical, Hands-On Skills (24.01%):** A very close second, about 24% of employees requested more practical training opportunities. This category includes hands-on workshops, simulations, field training, or on-the-job training where they can practice skills rather than just hear about theory. Even in an era of online learning, this result highlights that certain competencies (like operating a new piece of surveying equipment, or practicing project management scenarios) benefit from direct experience. It aligns with the demographic finding that a large portion of staff are in field and technical roles who value learning by doing.

Other training topics had somewhat lower but still significant interest: Leadership and Management Development (18.7%) was next, indicating supervisors and aspiring leaders want more development (e.g., people management skills, strategic planning). Emerging Technologies and Innovations (17.3%) was also notable (i.e., employees recognize the need to stay current with things like intelligent transportation systems, data analytics tools, new construction techniques, etc.). Only 12.97% chose Regulatory Updates as a priority area. This suggests that while compliance training (e.g., updates on federal regulations, HR policies) is necessary, employees do not consider it as urgent a need as the more job-specific or hands-on training. This is possibly because INDOT already provides sufficient info on regulations, or because these topics are seen as less immediately useful. In fact, some respondents explicitly commented that courses covering regulations or general knowledge felt “too routine” or “not applicable to my work,” underscoring the relative lack of enthusiasm for generic training content. This finding implies INDOT may need to recalibrate its training portfolio: increase offerings in high-demand areas (practical, specialized skills) while perhaps streamlining the purely regulatory or low-demand topics to avoid oversaturation and disengagement.

The main barriers to training participation were reported by employees (each respondent could select multiple barriers). The number one barrier was “Lack of Relevant Courses” (26.06%). In other words, employees feel the available menu of courses does not match what they actually need. This also shows that employees are looking for certain trainings that they can’t readily find in INDOT’s current catalog. The second most cited barrier was “Time Constraints” (22.80%). Many employees struggle to fit training into their schedules, due to heavy workloads, project deadlines, or understaffing that makes it hard to be away from the job. The third barrier in frequency was “Workload during training periods” (~16%), which is closely related to time constraints, essentially reinforcing that taking time off for training,

Other barriers included financial or travel constraints (~10%–11%). Geographical accessibility being 10% suggests that location still matters for some in-person sessions (e.g., if all training is in Indianapolis, those in distant districts find it burdensome). A smaller share (5%–6%) admitted lack of interest or motivation as a barrier, indicating most employees do want training if other barriers are removed. A few (around 2%–6%) mentioned resource constraints (like lack of computer access or internet for online training in the field) and “Other” reasons (some of which in comments alluded to not knowing about training in time, or bureaucratic hurdles in registering). The most frequently reported limitations of current training programs were content that did not match employees’ needs (27.38%), overly theoretical content with limited practical application (19.80%), and disruption to regular work responsibilities (19.34%; Figure 5.14).

These results highlight critical areas for action. First and foremost, INDOT needs to expand and update its training offerings to better align with employees’ needs. The call for more department-specific and practical training suggests engaging subject experts within INDOT to develop targeted courses (for example, a bridge inspection unit could design a hands-on workshop for new bridge inspectors). It also suggests possibly partnering with external providers (like technical schools or equipment vendors) to deliver hands-on training for specialized skills. The Curriculum Advisory Board recommended in the roadmap is one mechanism to continuously align offerings with needs.

Secondly, to address time constraints, INDOT may consider policy or culture changes such as allotting a certain number of training hours per month as part of work duties (so employees don’t feel they’re falling behind when attending training). Supervisors should be encouraged to backfill or redistribute work to cover for employees in training, emphasizing that training is an investment, not a day off. Additionally, increasing online training (as employees prefer) can mitigate time and travel barriers. For example, short e-learning modules can be taken during downtimes and don’t require travel time. The barrier of “lack of relevant courses” being top-ranked is particularly telling: it means if INDOT provides the right training, employees will participate. This aligns with the relatively low mention of “lack of interest” By refocusing the training program on high-need topics (project management, data analysis, technical skills, etc.), INDOT can likely boost engagement significantly. Therefore, INDOT should also market the new courses well (to overcome the awareness issue mentioned earlier). It’s also important to periodically survey or solicit input (perhaps via the new Advisory Board or annual assessments) to ensure training relevancy keeps pace with changing needs.

In summary, INDOT employees are eager for more job-specific and hands-on training, but they face notable hurdles in accessing training, especially due to course availability and scheduling issues. The results highlight a gap between what employees want and what is currently provided. INDOT can close by expanding relevant training content and making it easier for employees to attend training on work time. These insights strongly inform the recommendations in the Workforce Development Roadmap, such as establishing the Curriculum Advisory Board and improving communication and scheduling of training opportunities.

5.3.5 Skill Assessment and Development Needs

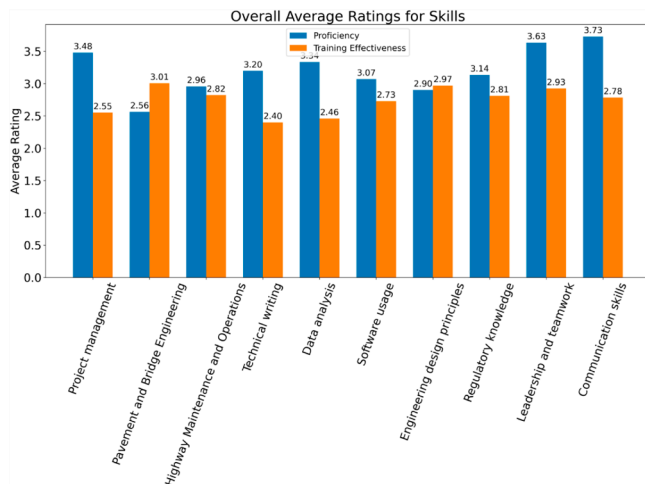


Figure 5.15 Comparison of Average Employee Proficiency and Perceived Training Effectiveness Across Key Technical and Soft Skills.

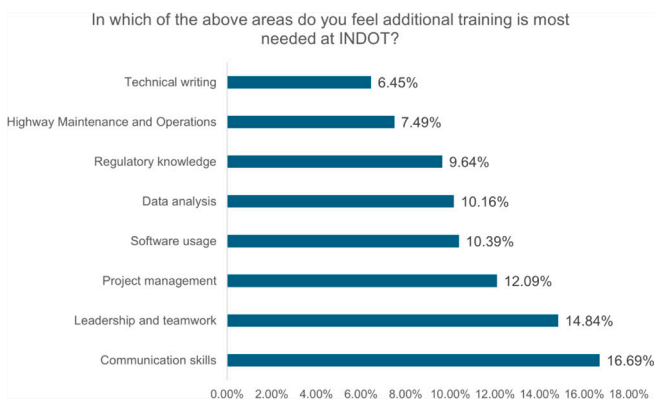


Figure 5.16 Identified Priority Areas for Additional Training at INDOT.

The survey’s skill assessment exercise provided a granular look at where employees feel underprepared and how effective current training is in those areas. Employees rated both their personal proficiency and the effectiveness of INDOT’s training across the assessed technical and soft skill areas (Figure 5.15). By analyzing these dual ratings, we identified a “skill gap” for each domain, calculated as (Training Effectiveness rating) – (Proficiency rating). A negative value indicates that employees’ proficiency needs are higher than what INDOT’s training is currently delivering, thus a gap where more or better training is needed. A positive value would mean training may be exceeding current needs (a possible area to optimize or reduce effort).

The results revealed that most skill areas have either a neutral or negative gap, with none showing a significantly positive gap, suggesting there is no area where training is overshooting the need. Two skill areas in particular showed the largest negative gaps, making them top priorities:

- **Project Management:** This had the largest gap, approximately -0.93 on the rating scale. In practical terms, employees rated their proficiency in project management relatively high (many INDOT

staff, especially engineers, do manage projects of some size), but they rated the effectiveness of current project management training significantly lower. This implies that while employees recognize project management as a critical skill, they feel INDOT’s training offerings (such as courses on project scheduling, budgeting, stakeholder coordination, etc.) are not adequately helping them improve. The nearly one-point gap is substantial on a typical 5-point scale (if used), pointing to a clear unmet need. In interviews, some supervisors mentioned they learned project management “on the fly” and would welcome more structured training, especially with INDOT-specific processes and tools.

- **Data Analysis and Software Skills:** The second biggest gap identified was Data Analysis, with about -0.88 difference. This likely encompasses the ability to interpret traffic data, maintenance logs, cost data, etc., and to use software tools (Excel, GIS, specialized asset management programs) effectively. Many respondents, particularly in engineering and planning divisions, noted that the growing emphasis on data-driven decisions has outpaced their training. They may be proficient in traditional analysis but need to learn new software or statistical methods. The current training in this area was rated as falling short. It’s worth noting that technology evolves rapidly, so a lag in training can quickly create a skills gap. This finding is consistent with national trends where DOTs are increasingly seeking data analytics capabilities in their staff.

Other skill areas (beyond the top two) that showed moderate negative gaps included things like advanced technical engineering skills (e.g., new design standards or materials), leadership and supervision, and communication skills. None of these had a gap as large as project management or data analysis, but they were slightly negative, suggesting room for improvement. On the positive side, there were a few areas where the gap was near zero or only slightly negative (e.g., safety procedures and regulatory compliance knowledge). This could indicate that INDOT’s training in safety and compliance is adequate (which would make sense, as those are areas INDOT likely emphasizes due to legal requirements). It might also reflect that employees feel fairly proficient in those areas already, or that the training provided (like regular safety trainings) matches their needs.

It is encouraging that respondents perceive training as helpful in some domains (“Positive: Training is helpful” was noted for any positive gap), but since no domain had a strongly positive gap, INDOT should primarily focus on closing the negative gaps. The largest gaps in Project Management and Data Analysis suggest these should be priority topics for new or improved training programs. For instance, INDOT could develop a Project Management Academy, which is a structured program or series of workshops that trains employees (especially new project managers or aspiring managers) in modern project management techniques tailored to INDOT’s context (including use of project management software, managing project scope and schedule, etc.). Similarly, a targeted Data Analysis training series could be implemented, potentially starting with core tools (like advanced Excel or Power BI training for all relevant staff) and progressing to more specialized analytics in areas like traffic modeling or maintenance optimization.

It’s also noteworthy that employees with fewer years at INDOT tended to report larger skill gaps in some areas (especially project management and communication), whereas very

experienced employees sometimes reported gaps in technology-related skills. In a separate question on priorities for additional training, communication skills (16.69%), leadership and teamwork (14.84%), and project management (12.09%) were the most frequently selected areas (Figure 5.16). This suggests a need to customize training by career stage: early-career employees might benefit from fundamental project management and interpersonal skills training, whereas veteran employees might need more upskilling in new technologies and data tools. The roadmap’s recommendation for an Early-Career Fundamentals program and ongoing training for emerging technologies directly addresses these observations.

In conclusion, the skill gap analysis highlights that INDOT’s current training efforts are not fully keeping up with the evolving skill demands in certain key areas. Project management and data analysis emerge as the most critical gaps, where employees need more support to excel in managing complex projects and leveraging data for decision-making. By investing in these areas, INDOT will not only improve individual performance but also overall project delivery and innovation capacity. These findings have been directly incorporated into our training program recommendations, ensuring that the proposed training initiatives target the skills with the highest payoff for INDOT’s success.

5.3.6 INDOT Organizational Support for Workforce Development

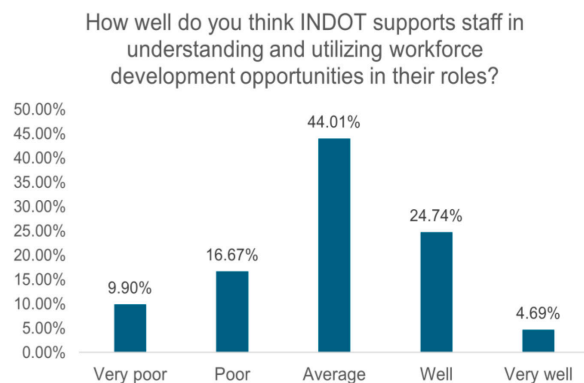


Figure 5.17 Staff Assessment of INDOT’s Support for Workforce Development.

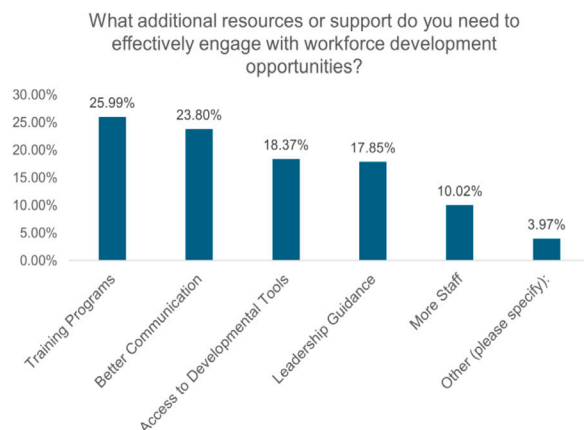


Figure 5.18 Additional Resources Identified by Staff to Improve Engagement With Development Opportunities.

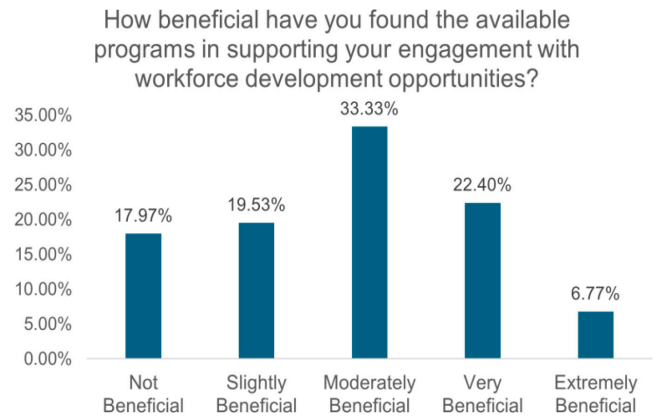


Figure 5.19 Perceived Benefits of Available Workforce Development Programs.

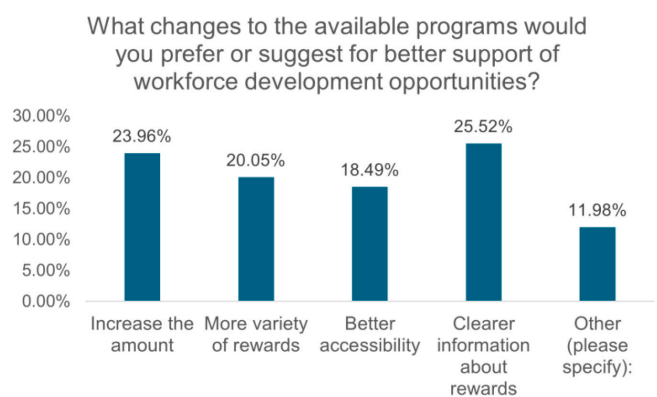


Figure 5.20 Suggested Changes for Better Program Support.

The survey also explored how employees perceive INDOT’s support for their training and professional growth, as well as what improvements they would like to see at the organizational level. The feedback indicates that while INDOT has some supportive elements in place, there is significant room to strengthen the culture and infrastructure around workforce development.

When asked to rate INDOT’s overall support for employee development (for example, whether employees are given time for training, encouragement to pursue learning, recognition for skill advancement, etc.), the most common response was “Average.” In fact, 44.01% of employees rated INDOT’s support as “Average.” (Figure 5.17). Meanwhile, a smaller portion rated it “Above Average” or “Excellent,” and some rated it “Below Average.” The predominance of an average rating suggests that employees feel INDOT does some things to support development (it’s not non-existent), but those efforts are neither particularly robust nor comprehensive. Many likely see INDOT’s support as perfunctory. For instance, training is offered but not strongly promoted, or policies for development exist but could be improved. An average score can be interpreted: employees don’t think INDOT is not supportive at this, but they certainly don’t see it as a strong point of the organization either. In addition, training programs (25.99%) and better communication (23.80%) were the most frequently selected additional resources or forms of support needed to engage with

workforce development opportunities (Figure 5.18). When evaluating how available programs supported their engagement with workforce development opportunities, respondents most commonly rated them as “Moderately Beneficial” (33.33%), followed by “Very Beneficial” (22.40%; Figure 5.19).

Employees provided concrete suggestions on what the organization could do better. The top suggestion (selected by 25.52% of respondents) was the need for clearer information about rewards and incentives for training (Figure 5.20). This refers to understanding what an employee gains from engaging in development (e.g., will completing certain training lead to a certificate, a pay increase, points towards promotion, public recognition, etc.). Currently, it appears INDOT’s system of incentives is either weak or not communicated well. Employees may not know if INDOT has (or could have) programs like tuition reimbursement, certification bonuses, or career development plans. The survey indicates they want transparency and tangible rewards for investing time in training. The second most common suggestion, closely behind (chosen by 23.96%), was to increase the number of rewards given for training achievements. Taken together, roughly half of the employees are highlighting recognition and reward as a major gap. They feel that currently, going above and beyond in professional development isn’t sufficiently acknowledged. This sentiment aligns with earlier findings that career advancement opportunities are lacking; formalizing a reward structure (monetary or otherwise) for skill development could motivate employees and signal that the organization truly values continuous learning. Other suggestions that came through in the qualitative data and multiple-choice options included:

- **More Structured Career Paths:** Employees expressed that INDOT could do more to outline clear pathways for advancement. For example, some suggested a formal mentorship or rotation program that helps employees prepare for higher roles. The lack of structured pathways was seen as leading to frustration or even turnover for ambitious staff. If people don’t see how developing skills will translate to career growth within INDOT, they may disengage or leave.
- **Improved Access to Resources:** Some noted that not all employees have equal access to training resources (e.g., field staff might not have computers or time to do online training during work). Suggestions included setting up dedicated training facilities in each district or ensuring that teams have “training days” with coverage for their duties.
- **Leadership Engagement:** A recurring theme was the desire for stronger encouragement from management. While many managers are supportive, employees would like to see top leadership actively champion training initiatives (e.g., setting department goals for training hours, or executives attending and speaking at training events to show endorsement).

The survey also asked employees to identify what factors would most encourage them to participate in training. The responses reinforced some points from earlier: the opportunity for professional development (cited by 80.1%) and the timeliness/availability of training (74.2%) were key factors. Additionally, ensuring that training content is aligned with personal development plans was mentioned. This indicates that organizational support isn’t just about offering courses, but about integrating those courses into an employee’s career trajectory (e.g., via Individual Development Plans).

From these findings, it’s apparent that INDOT’s organizational culture around training could be stronger. The recommendations in our roadmap address this by proposing initiatives like a formal Awards and Recognition program for professional development achievements, and establishing mechanisms (like the advisory board and regular reporting) which inherently increase leadership and organizational focus on workforce development. Agencies such as Utah DOT and Michigan DOT have implemented digital badge systems and employee appreciation programs to recognize skill attainment, serving as models. For INDOT, improving organizational support might involve instituting certificates or badges for completed training milestones, highlighting employees’ new qualifications in internal newsletters, or tying training to performance evaluations in a positive way.

In summary, employees want INDOT to more visibly and tangibly value their growth. By clarifying the rewards for training (be it career advancement, financial incentives, or recognition) and providing structured support (clear pathways, allotted time, managerial encouragement), INDOT can create a culture where continuous improvement is part of the norm. Such a culture not only motivates employees to engage in training but also helps retain talent, as people see a future for themselves at the agency. These changes are crucial to sustain the impact of the technical training improvements discussed earlier.

5.4 Workforce Development Roadmap

To translate the survey findings into action, the project team, in collaboration with INDOT stakeholders, developed a Workforce Development Roadmap outlining five major initiatives and a four-quarter implementation schedule (Figure 5.21). This roadmap is essentially a blueprint for evolving INDOT’s training program and organizational practices to fill the gaps identified in the analysis. The roadmap comprises five major components or strategies, each addressing a critical need



Figure 5.21 Suggested Workforce Development Roadmap of INDOT.

highlighted by the survey. They are: (1) Communication Strategy, (2) Curriculum Advisory Board (CAB), (3) Workforce Development Report, (4) Awards and Recognition, and (5) Early-Career Fundamentals Program. Below, we describe each component, including its rationale (linking back to survey results and best practices) and a high-level timeline for execution (short-, medium-, and long-term actions).

5.4.1 Recommendation 1: Communication Strategy

5.4.1.1 Objective and Alignment with INDOT Goals.

The objective of this implementation plan is to enhance internal communication across the Indiana Department of Transportation (INDOT) by introducing targeted initiatives that improve information flow, employee engagement, and organizational alignment. This plan focuses on strengthening how INDOT communicates important information to its employees and how employees can share feedback and ideas. By deploying modern communication channels and practices, INDOT aims to ensure that every team member is well-informed about training opportunities, organizational updates, and avenues to contribute ideas.

This internal communication strategy is closely aligned with INDOT's mission and strategic goals. Improving internal communication will support INDOT's core values of teamwork and innovation by encouraging collaboration across divisions. It also contributes to INDOT's goal of advancing a workforce by prioritizing continuous learning and open communication. This plan will help create a more engaged and knowledgeable workforce that is better equipped to achieve INDOT's safety and efficiency.

5.4.1.2 Key Components (Deliverables). The recommended communication strategy comprises several key components, each aimed at addressing specific areas of workforce communication. Each component is designed to engage employees through a specific channel or practice, fostering a more connected and informed workforce. The following deliverables will be implemented as part of this plan:

- **Training Alerts via SAP SuccessFactors (Mobile Push Notifications/SMS):** INDOT will implement an automated alert system through its SAP SuccessFactors platform to deliver training notifications directly to employees. This system will send push notifications to the SuccessFactors mobile app and/or SMS text messages to employees' phones, alerting them of required training courses, approaching deadlines for mandatory training, and new optional learning opportunities. The intent is to increase awareness and completion rates of training by providing timely and convenient reminders. This component leverages existing technology to ensure that important training information reaches employees even when they are in the field or away from their computers.
- **Supervisor and Advisor Communications:** INDOT will strengthen the role of supervisors and advisors in internal communications. A structured communication process will be established where supervisors receive regular briefings or talking points on key updates. Supervisors and unit advisors will be equipped with guidance and tools (such as email templates or meeting briefs) to help them effectively communicate policy changes, safety messages, and development opportunities to frontline staff. By using the supervisory chain as a communication channel, the agency

ensures messages are personalized and contextualized for each team, and employees have opportunities to ask questions or provide feedback through their immediate leaders.

- **Idea-Sharing Portal (SharePoint-Based):** To promote a culture of innovation and continuous improvement, INDOT will establish an online idea-sharing portal using the SharePoint platform (accessible through INDOT's intranet). This portal will allow employees from any district or department to submit ideas for improvements, efficiency, and safety. The portal will include features for idea submission, discussion, and tracking. Employees can post their suggestions and see the status of their ideas as they are reviewed by a designated innovation committee or moderators. The SharePoint-based site will also host a knowledge base of past implemented ideas and best practices. This two-way communication tool empowers staff at all levels to contribute their insights and helps leadership identify and implement valuable grassroots innovations.
- **Monthly Workforce Development Updates:** INDOT will integrate a Workforce Development Update into the existing monthly meetings at the district and unit levels. Each month, a brief update will be prepared (by the Human Resources team) highlighting relevant topics such as upcoming training sessions, new learning resources, career development programs, or success stories of employee development. District and unit managers will allocate time in their staff meetings to present these updates and discuss them with their teams. Including this dedicated segment in regular meetings ensures that all employees receive consistent information about development opportunities.

5.4.1.3 Timeline. The implementation of the internal communication strategy will be carried out over the course of a year, with clear deliverables each quarter. This phased approach ensures steady progress and allows for adjustments based on feedback at each stage. The following timeline outlines key milestones and deliverables by quarter:

- **Quarter 1 (Q1) - Initiation and Design:** Establish the project team and governance for the communication strategy rollout. In the first quarter, the team will conduct a needs assessment and gather input from stakeholders, including IT staff, to refine requirements for each component. Key deliverables in Q1 include the design of the training alert system within SuccessFactors (in coordination with the IT and Talent Management teams), a prototype or outline of the SharePoint idea portal, and development of supervisor communication guidelines. By the end of Q1, the implementation plan and design specifications for all tools and processes will be finalized and approved by INDOT leadership.
- **Quarter 2 (Q2) - Development and Pilot Launch:** In the second quarter, INDOT will build and pilot the new communication tools. The SuccessFactors training alert feature will be configured and tested with a pilot group (such as a few units or districts) to ensure notifications are working properly and reaching employees' devices. Simultaneously, the SharePoint idea-sharing portal will be developed and launched in a beta phase for employees in selected departments to submit and review ideas. Training or orientation sessions will be held for supervisors to prepare them for their enhanced communication role, including how to use the provided templates and incorporate messaging into their meetings. The monthly workforce development update practice will begin in a few pilot meetings. By the end of Q2, the training alert system and idea portal should be operational in pilot mode, and initial feedback will be collected for improvements.

- **Quarter 3 (Q3) - Agency-Wide Rollout:** Based on lessons learned from Q2 pilots, any necessary adjustments will be made, and then the initiatives will be rolled out agency-wide in the third quarter. The training alerts via SuccessFactors will go live for all employees, ensuring everyone receives mobile push or SMS training notifications. The idea-sharing portal will be opened to all INDOT employees, along with an internal campaign to promote its use (including communications from leadership encouraging idea submission). All supervisors will now be actively communicating key updates to their teams, following the established guidelines and using the provided tools. The monthly workforce development updates will be firmly embedded in all district and unit monthly meetings. By the end of Q3, all internal communication components will be fully implemented across INDOT, and the focus will shift to monitoring usage and encouraging engagement.
- **Quarter 4 (Q4) - Evaluation:** The fourth quarter will concentrate on evaluating the effectiveness of the new internal communication measures and ensuring their sustainability. The project team will collect data on key metrics (such as training completion rates, idea submissions, and employee feedback) to assess the impact. Surveys or focus groups may be conducted to gauge employee and supervisor satisfaction with the new communication tools and processes. Based on this evaluation, a report will be prepared for INDOT leadership detailing the outcomes, best practices, and any recommended adjustments. By the end of Q4, INDOT will have a sustained internal communication program in place, with continuous improvement mechanisms for the future.

5.4.1.4 Stakeholder Roles and Responsibilities. Successful implementation of this communication strategy requires clearly defined roles and responsibilities among stakeholders. Clear accountability and collaboration among these stakeholders will drive the successful execution of the plan. The following outlines who will be involved and what is expected of them:

- **Executive Leadership:** INDOT's senior leadership (Commissioner and executive team) will act as sponsors of the initiative. They are responsible for endorsing the internal communication strategy, providing strategic direction, and allocating the necessary resources (budget, personnel, and time) for implementation. Leadership will also set the tone by consistently emphasizing the importance of effective communication and engaging with employees through the new channels (for example, contributing messages to the workforce development updates or acknowledging ideas submitted on the portal).
- **Project Lead and Implementation Team:** A dedicated project lead (for instance, from the Human Resources or Communications department) will oversee the day-to-day execution of the plan. This individual, along with a cross-functional implementation team (including members from Talent Management, IT, and representatives from various districts), will coordinate all tasks. The team's responsibilities include developing content (training alerts and monthly updates), configuring and testing systems, training users (especially supervisors and portal moderators), and monitoring progress. They will serve as the central point of contact for questions or issues during rollout.
- **Information Technology (IT) Department:** The IT team will support the technical aspects of the strategy. They are responsible for integrating the training alert functionality into the SuccessFactors system (and ensuring integration with email, mobile app, or SMS gateway as needed) and for developing and deploying the

SharePoint idea portal. IT will ensure that these platforms are secure, user-friendly, and accessible to all INDOT employees. Additionally, IT will provide ongoing technical support and maintenance for the tools and address any technical issues promptly.

- **Supervisors and Managers:** Supervisors at all levels play a critical role as communication conduits. Their responsibility is to actively participate in the communication process by sharing information with their teams in a timely manner. They will receive training and regular briefings on key messages, and in turn, they must relay those messages during team meetings or one-on-one check-ins. Supervisors should also encourage their team members to use the idea-sharing portal and set aside time in meetings for the workforce development updates. Furthermore, supervisors are expected to provide feedback to the project team on how the communications are being received on the ground and suggest improvements.
- **Employees (All Staff):** Every INDOT employee is both a recipient and a participant in the internal communication process. Employees are responsible for engaging with the provided communication channels (e.g., reading and responding to training alerts, attending meetings and paying attention to workforce development updates, and utilizing the idea portal to contribute suggestions). They should also provide feedback through surveys or direct conversations on what is working or where more information is needed. An engaged workforce will ensure the success of these initiatives, so employees are encouraged to take ownership of staying informed and contributing their ideas.

5.4.1.5 Evaluation Metrics. To measure the success and impact of the internal communication strategy, INDOT will track several key performance indicators. These indicators will provide quantifiable evidence of progress and highlight areas that may require adjustment. The following metrics will be monitored throughout and after implementation:

- **Training Completion and Compliance Rate:** An increase in the percentage of employees completing mandatory training by designated deadlines will indicate the effectiveness of the SuccessFactors training alerts. Baseline completion rates (prior to the alerts) will be compared to post-implementation rates. A significant improvement (e.g., moving from 75% on-time completion to 90% or higher) would demonstrate that timely reminders via push notifications or SMS are helping employees stay on track with their required learning.
- **Employee Engagement in Idea-Sharing:** The usage of the SharePoint idea portal will be measured by metrics such as the number of ideas submitted per quarter, the number of unique employees contributing ideas or comments, and the percentage of submitted ideas that receive feedback or are implemented. A thriving idea portal (with broad participation across districts and roles) will signal a more open and innovative communication culture. For example, a target might be set for at least 50 ideas submitted agency-wide in the first year, with representation from every district.
- **Internal Communication Satisfaction:** Qualitative and quantitative feedback from employees will be gathered to gauge improvements in internal communication. This could be measured through an annual employee survey or pulse surveys specifically about communication effectiveness. Indicators may include the percentage of employees who agree that INDOT keeps me well-informed about important updates and training or an increase in overall satisfaction scores related to internal communication. Improvement in these survey results over the baseline will reflect the success of the new

communication initiatives. Additionally, feedback from supervisors and staff in focus groups or open forums will provide insight into areas of strength and opportunities for further refinement.

5.4.1.6 Supporting Tools and Templates. Implementing the strategy will be facilitated by a set of tools and templates designed to standardize and simplify communications. By using these standardized tools, INDOT will ensure consistency and efficiency in executing the communication strategy. These supporting materials include:

- **SuccessFactors Notification System:** The existing SuccessFactors Learning Management module will be configured with an automated notification system. This includes pre-defined alert triggers for various scenarios (assignment of a new training course, approaching due dates, completion acknowledgments, etc.). Templates for the notification messages (short, clear texts for push notifications and SMS) will be set up to ensure consistency in tone and information. Employees will be provided instructions on how to install or enable the SuccessFactors mobile app notifications on their devices.
- **SharePoint Idea Portal Templates:** The SharePoint site will utilize a standardized form for idea submissions, prompting employees to provide key details like the idea title, description, expected benefit, and any resources needed. A template workflow will guide how ideas are captured and routed: for example, upon submission, an automatic notification goes to the innovation committee or assigned reviewers. The portal will also use a template for presenting ideas (so that each idea's page has a consistent format) and for providing status updates (such as Under Review, Accepted, or Implemented). Users will have access to a simple guide on how to use the portal effectively.
- **Supervisor Communication Toolkit:** A toolkit will be developed to assist supervisors and managers in their expanded communication role. This will include templates and tools such as an email template for follow-up communications to their teams (summarizing key points after management meetings), a meeting agenda template that incorporates a slot for the monthly workforce development update, and tip sheets on effective communication practices. By providing a standardized agenda template, all team meetings will consistently cover the new update segment. The toolkit will also feature a checklist for supervisors to prepare for meetings (ensuring they have all the latest talking points and have reviewed any new training alerts or idea submissions relevant to their team).
- **Monthly Update Content Template:** The Talent Management team will use a consistent template to create the monthly workforce development update that managers will deliver in meetings. This template might be a one-page briefing document or a few slides that highlight that month's key development themes (e.g., Training Spotlight, Policy Update, Employee Success Story, etc.). By standardizing the format, employees will come to recognize and expect the monthly update content, and managers will find it easier to present. The template ensures that important categories of information are always covered and presented in a digestible format.
- **Feedback and Survey Instruments:** To support continuous improvement, templated feedback forms or short surveys will be provided to capture employee input on the new communication channels. For instance, after the first few monthly updates or after an idea submission cycle, a brief standardized survey may be deployed to gauge effectiveness. Having these survey templates ready will enable INDOT to quickly gather data and make adjustments without having to design new feedback tools.

5.4.2 Recommendation 2: Curriculum Advisory Board

5.4.2.1 Objective and Alignment with INDOT Goals.

We suggest a Curriculum Advisory Board (CAB) as an agency-wide body to ensure that all training programs remain current and aligned with the department's strategic objectives. The CAB will serve as a governing group that reviews and advises on INDOT's training curricula, proactively updating course content to keep pace with industry best practices, regulatory changes, and emerging organizational needs. INDOT aims to strengthen its talent pipeline and employee capabilities, ensuring staff at all levels have the skills and knowledge needed to deliver on INDOT's mission.

This initiative directly supports INDOT's goals of safety, innovation, and operational excellence. A well-aligned training curriculum contributes to a safer and more efficient transportation system by equipping employees with up-to-date competencies (for example, in new construction technologies or updated safety regulations). The CAB will also promote cross-divisional collaboration and knowledge sharing, bringing together experts from different parts of the agency and external partners to provide diverse perspectives. This collaborative approach aligns with INDOT's values of teamwork and continuous improvement in service of Indiana's infrastructure needs.

The scope of the CAB's oversight will initially encompass all INDOT training programs, including technical skills training, leadership development courses, safety and compliance training, and other professional development offerings. By covering this broad spectrum, the board ensures consistency and strategic alignment across the entire workforce development portfolio. The CAB's structure is designed to be flexible and can accommodate future specialization. For instance, as needs evolve, the board may form subcommittees focused on specific domains (e.g., technical training or leadership development) while still maintaining an integrated oversight framework. This flexibility ensures that the CAB will continue to support INDOT's long-term workforce development strategy as the agency grows and adapts.

5.4.2.2 Key Components (Deliverables). To successfully establish the CAB, several key components and deliverables will be developed as part of this implementation plan:

- **CAB Charter and Governance Structure:** A formal charter document defining the CAB's purpose, scope, authority, and operating procedures. This includes the board's mandate to advise on curriculum design, its meeting frequency and decision-making processes, and how recommendations will be documented and approved. The charter will align with INDOT's organizational policies and ensure the CAB has a clear authorization and accountability framework.
- **Board Membership and Composition:** Identification and appointment of the initial CAB members. The board will consist of a diverse group of approximately 10–12 individuals, including internal subject-matter experts from each major INDOT division (e.g., Construction, Maintenance, Planning, Operations, and District representatives for field offices) as well as a few external partners (e.g., university faculty or an industry association representative). A Chairperson (likely a senior manager from INDOT's Talent Management) will lead the CAB. Membership selection

criteria and term lengths will be defined to ensure balanced representation and the infusion of fresh perspectives.

- **Meeting Schedule and Advisory Process:** Establishment of a regular meeting schedule and workflow for the CAB's operations. The plan is to operate the board on a semiannual basis (twice per year). One meeting each year may focus on reviewing the current portfolio of training courses (evaluating content relevance, quality, and any gaps), and the other meeting on assessing and advising on new training initiatives or pilot programs. Each meeting will follow a structured agenda and produce formal minutes and action items. Between meetings, CAB members will be expected to perform pre-work such as reviewing specific curricula or emerging training needs in their area, and they may be consulted if urgent curriculum decisions arise between the scheduled sessions.
- **Curriculum Review and Update Framework:** A defined methodology for how the CAB will evaluate INDOT's training programs and recommend changes. This framework includes conducting an initial baseline assessment of all existing INDOT training offerings (across technical, leadership, compliance, etc.) and setting criteria for evaluation (such as relevance to current job roles, compliance with latest regulations, feedback scores from trainees, and frequency of course updates). The framework will detail how CAB recommendations are to be formulated - for example, identifying courses that should be updated or retired, and areas where new training is needed. It will also outline the process for prioritizing these recommendations and obtaining any necessary approvals (from INDOT leadership or Talent Management) for implementation.
- **Integration into INDOT's Learning & Workforce Development:** Mechanisms to embed the CAB's advisory role within INDOT's existing training development and governance processes. This involves ensuring that CAB recommendations feed into the annual training plan and budgeting cycle. For instance, if the board identifies the need for a new course or a significant update to a program, these items will be incorporated into INDOT's workforce development plan and resource allocation for the next cycle. The Talent Management team will coordinate the execution of approved curriculum changes (e.g., updating materials, scheduling new courses in the learning management system) and report back on progress. Additionally, the CAB's insights will be reflected in key documents and forums (such as including a section on CAB activities in INDOT's annual training report), thereby integrating its guidance into the broader organizational learning strategy.

5.4.2.3 Timeline. The implementation will be executed over the course of the first year, with clear milestones and a primary deliverable each quarter:

- **Quarter 1 (Q1) - Charter and Board Setup:** In the first quarter, the focus is on establishing the foundation for the CAB. This includes drafting the CAB Charter, reviewing it with key stakeholders, and securing executive approval. The initial CAB membership will be assembled: identifying the appropriate representatives from each division and inviting external advisors to participate. By the end of Q1, the deliverables are an approved CAB Charter and a confirmed roster of CAB members, with roles (Chair and members) clearly designated.
- **Quarter 2 (Q2) - Initial Meeting and Needs Assessment:** In the second quarter, the CAB will convene for its inaugural meeting. During this meeting, members will review the board's objectives and operating norms and begin a comprehensive review of existing training programs. The CAB will discuss immediate training

needs or gaps (for example, any courses that are out-of-date or new regulatory training requirements that have arisen). Key outputs of Q2 include the completion of the first CAB meeting, a documented list of initial curriculum recommendations (such as courses identified for update, removal, or development), and meeting minutes capturing decisions and action items.

- **Quarter 3 (Q3) - Implementation of Curriculum Updates:** The third quarter is dedicated to acting on the CAB's recommendations. INDOT's Talent Management team, in coordination with relevant CAB members, will develop or update the targeted training content identified in Q2. This may involve revising course materials, creating new training modules, or phasing out obsolete courses. By the end of Q3, at least some of the recommended curriculum changes should be implemented or in progress. The deliverable for Q3 is the execution of initial curriculum updates (evidenced by updated training materials or new courses introduced into the INDOT training catalog), along with a progress report prepared for the CAB and leadership detailing the actions taken.
- **Quarter 4 (Q4) - Evaluation and Future Planning:** In the fourth quarter, the CAB will have its second semiannual meeting of the year. The board will evaluate the outcomes of the changes implemented in Q3, reviewing metrics or feedback (e.g., improved training survey results or successful completion of new courses) to assess impact. The CAB will also discuss and set priorities for the next year's training needs, effectively creating a roadmap for continued curriculum development. Deliverables in Q4 include the successful completion of the second CAB meeting (with minutes and updated action items), and an end-of-year summary report. This report will highlight what has been accomplished in the first year (such as the number of courses updated and key improvements made) and lay out recommendations and a proposed meeting schedule for the following year.

5.4.2.4 Stakeholder Roles and Responsibilities. Successful implementation and sustainability of the CAB require clear definition of stakeholder roles:

- **Talent Management:** The Talent Management spearheads the CAB initiative and provides ongoing coordination. The leader of the Talent Management team will serve as the CAB Chair, responsible for organizing meetings and guiding the board's activities. The Talent Management team will handle logistical support such as scheduling meetings, preparing agendas, and documenting minutes and recommendations. Importantly, The Talent Management team ensures that the CAB's advice is funneled into INDOT's training strategy and that approved curriculum changes are executed. They act as a liaison between the CAB and executive leadership, reporting progress and securing any resources needed for implementation.
- **Division and District Representatives (Internal SMEs):** Each major INDOT division (Construction, Maintenance, Planning, Engineering, etc.), as well as field districts, will nominate a senior representative to serve on the CAB. These internal subject-matter experts (SMEs) are charged with bringing the perspective of their unit's training needs and challenges. They actively participate in CAB meetings to review course content and propose improvements, ensuring that recommendations are grounded in operational realities. Between meetings, they may be tasked with evaluating specific training materials or collecting input from their teams. Their responsibility is to advocate for their division's workforce development needs and to help shape training solutions that address those needs.

- **External Partners (Advisors):** The CAB will include a small number of external advisors, such as a representative from an academic partner (e.g., Purdue University), a professional association, or the Federal Highway Administration. These external partners provide valuable outside insight on emerging trends, technologies, and best practices in transportation workforce training. They attend CAB meetings to offer feedback on INDOT's training direction and to suggest innovative approaches or resources from outside the agency. While they do not have formal decision-making authority within INDOT, their advisory role helps ensure INDOT's curricula remain forward-looking and benchmarked against industry standards. Their involvement also strengthens INDOT's stakeholder relationships and opportunities for collaboration (for example, co-developing courses with a university).
- **Executive Leadership (Sponsors):** INDOT's top leadership will act as sponsors and champions of the CAB. This includes executives such as the team leader of Talent Management team, Deputy Commissioners, or other senior leaders who endorse the establishment of the board and provide high-level guidance. Executive sponsors are not regular members of the CAB, but they receive its recommendations and periodic updates. Their role is to ensure the CAB's work aligns with INDOT's strategic goals and to support the implementation of the board's recommendations. They may intervene to remove obstacles, allocate necessary funding or resources, and publicly affirm the importance of the CAB's mission. By doing so, they maintain organizational commitment to the CAB and hold the involved parties accountable for results.

5.4.2.5 Evaluation Metrics. To evaluate the effectiveness of the CAB and ensure it is delivering value, INDOT will monitor key metrics:

- **Curriculum Updates per Year:** The number of training curricula (courses or programs) updated, newly developed, or retired each year as a direct result of CAB input. This metric reflects the board's tangible impact on keeping INDOT's training content current. For example, a goal might be to have at least 3–5 significant course updates or new courses introduced in the first year. An increasing count of curriculum improvements year-over-year would indicate the CAB's sustained influence.
- **Meeting Schedule and Participation:** The CAB's adherence to its planned meeting schedule and the level of engagement by its members. This will be measured by whether two meetings are held per year (as scheduled) and attendance records showing representation from all key divisions and invited external partners. Success is defined by 100% of planned meetings occurring with broad participation (e.g., all major divisions in attendance and at least one external advisor present). Consistent participation demonstrates organizational buy-in and effective governance.
- **Training Effectiveness and Alignment:** Improvements in the perceived quality and relevance of INDOT's training programs over time. This can be measured through participant feedback surveys and management evaluations. For instance, INDOT can track the percentage of employees rating training as "effective" or "highly relevant to their job" before and after CAB implementation. A notable increase in these ratings (along with qualitative feedback citing updated or new course content as beneficial) would signal that the CAB is succeeding in aligning training offerings with actual needs and improving overall workforce development outcomes.

5.4.2.6 Supporting Tools and Templates. The CAB will be supported by existing systems and new templates that facilitate its operations without requiring significant new technology investments:

- **Existing Communication Platforms:** The board will leverage INDOT's current internal communication and collaboration tools to carry out its work. A dedicated SharePoint site (or similar intranet platform) will be used as a central repository for all CAB materials - including the charter, meeting agendas and minutes, curriculum inventories, and recommendation logs. This site will allow members to access documents, share feedback, and maintain version control on curriculum materials. Email and calendar tools (Outlook) will be used for meeting invitations and follow-ups. Utilizing familiar platforms minimizes training overhead and costs, and it ensures that all CAB members can easily collaborate and stay informed between meetings.
- **Charter and Governance Template:** The CAB's founding charter will be drafted using a standard INDOT template for committee charters or governance documents. This template ensures that all essential information is captured in a professional format - such as the CAB's mission statement, scope of authority, membership structure, meeting procedures, and reporting requirements. By using a template, INDOT can efficiently produce a comprehensive charter that is consistent with other internal documents. The charter template serves as a checklist to validate that no critical governance elements are overlooked in the board's design.
- **Standard Agenda and Minutes Forms:** To promote consistency and clarity in documentation, standardized forms will be used for CAB meeting agendas and minutes. The agenda form will outline a structured order of business (for example: roll call, approval of last meeting's minutes, review of ongoing curriculum projects, discussion of new training proposals, and assignment of next steps). The minutes form will have defined fields to record key details such as attendance, topics discussed, decisions made, and action items with owners and deadlines. These templates make it easy for the CAB's secretary to capture discussions and outcomes in a uniform way, and they help ensure that important information (like decisions and responsibilities) is clearly documented each time.
- **Curriculum Review and Tracking Tools:** A set of simple tools will support the CAB in reviewing and monitoring training programs. One tool is a "course review" template - essentially a checklist or evaluation form that CAB members can use when examining a particular course. This form guides reviewers to consider various aspects (course objectives, content accuracy, up-to-date regulations or standards covered, participant feedback, etc.) and to note their recommendations (e.g., "update needed," "satisfactory," or "replace with new course on X topic"). Using a common review form ensures that evaluations are systematic and comparable across different courses. Additionally, INDOT's Talent Management team will maintain a tracking log (for instance, a spreadsheet or SharePoint list) of all recommendations that come out of CAB meetings. This log will list each recommended action (such as "develop bridge inspection training module" or "retire outdated contract management course"), along with status updates (like "in development," "completed as of Q3," or "pending approval"). The tracking tool will be reviewed at each CAB meeting to follow up on progress and will be useful for reporting on the board's accomplishments and identifying any bottlenecks in implementation.

5.4.3 Recommendation 3: Annual Workforce Development Report

5.4.3.1 Objective and Alignment with INDOT Goals. INDOT will develop its first comprehensive annual Workforce Development Report to regularly monitor and communicate key workforce and training metrics. This initiative addresses INDOT leadership's need for clear, actionable workforce analytics by consolidating data on employee demographics, training participation, skill gaps, and development outcomes into a single internal report. Currently, available reports (for example, from the SuccessFactors learning management system) are limited in scope. The new report will fill this gap by providing a holistic, data-driven view of INDOT's workforce development progress. The report will serve as an internal management tool that informs decision-making and strategic planning related to talent management.

This effort aligns directly with INDOT's strategic goal of developing a highly skilled and adaptable workforce. By identifying workforce trends and skill gaps and tracking the effectiveness of training programs, the Workforce Development Report supports data-driven talent development and resource allocation. It reinforces INDOT's commitment to invest in its employees and provide them with the tools, training, and information needed to succeed. Incorporating this reporting process into INDOT's annual planning cycle will ensure that insights on workforce capacity and training outcomes inform broader agency strategies, budgeting, and policy decisions. In summary, the report initiative advances INDOT's mission by promoting transparency, accountability, and proactive management of its human capital.

5.4.3.2 Key Components (Deliverables). Annual Workforce Development Report: A comprehensive report document (published yearly) that presents INDOT's internal workforce and training data in an organized format. The report will include analysis of key metrics such as workforce demographics (e.g., staff levels by division and retirement eligibility), training participation and completion rates, certifications earned, identified skill gaps, and outcomes of development initiatives. It will also provide narrative insights and recommended actions to address workforce challenges.

5.4.3.3 Timeline. The implementation will be carried out over roughly one year, divided into four quarters, with specific objectives and a key deliverable in each quarter:

- Quarter 1 (Q1) - Define Report Scope: In the first quarter, the project team (led by the Talent Management team) will initiate detailed planning for the Workforce Development Report. This includes defining the report's structure and contents and determining what data must be collected. The Talent Management team will consult with INDOT division heads and executives to identify which workforce metrics and topics are most important to include (for example, safety training completion in Operations, or engineer certification levels in Construction). Concurrently, the Talent Management team and IT will audit existing data sources (SuccessFactors for training records, PeopleSoft or other HR databases for employee information, and any relevant survey results) to evaluate data availability and quality. Any gaps in

data collection will be noted, and plans will be made to address them (such as setting up new data capture processes or simple surveys for qualitative insights). Deliverable (end of Q1): A finalized report outline (table of contents and section descriptions) and a data requirements document, validated by key stakeholders, which details all metrics to be included and data sources or collection methods for each.

- Quarters 2 & 3 (Q2 & Q3) - Draft the Report: In the second and third quarters, the Talent Management team will compile the first Workforce Development Report. The team (including any external research partners assisting) will analyze the aggregated workforce data to extract insights and trends (for example, highlighting an increase in training participation or a looming wave of retirements in certain job classes). They will produce the narrative content of the report, complete with charts and tables as needed to illustrate findings. The draft report will cover the most recent annual period (e.g., the past fiscal or calendar year) and will include sections such as an executive summary, key findings, detailed metrics with interpretation, and recommended next steps or initiatives. Once the initial draft is prepared, it will be circulated to stakeholders (including the Talent Management team leadership, division heads, and executive leadership sponsors) for review and feedback. The draft will be revised to incorporate any comments and to ensure it aligns with INDOT's strategic messaging and information needs. Deliverable (end of Q3): A complete draft of the Workforce Development Report, reviewed by stakeholders, containing all intended sections and preliminary graphics, ready for final approval.
- Quarter 4 (Q4) - Publish Report and Integrate into Planning Cycle: In the fourth quarter, the inaugural Workforce Development Report will be finalized and published. The Talent Management team will incorporate final revisions from the Q3 review and work with INDOT's Communications team if needed for editing and formatting to ensure the report is polished and professional. The report will then be formally released internally, for example, distributed via email to leadership and made available on the INDOT intranet for all employees. This quarter will also see the integration of the report's insights into INDOT's strategic and operational planning. For instance, findings from the report (such as identified skill shortages or training program outcomes) will be referenced in developing the next fiscal year's HR/training budget and workforce plan. A post-implementation review meeting will be held to capture lessons learned from this first reporting cycle, including what data improvements or process changes are needed for the next year. By establishing this review and update cycle, INDOT ensures the Workforce Development Report becomes a sustained annual practice. Deliverable (end of Q4): The first INDOT Workforce Development Report is officially published and disseminated, and a framework is in place to repeat the reporting process in subsequent years as part of INDOT's annual planning cycle.

5.4.3.4 Stakeholder Roles and Responsibilities. Successful implementation of the Workforce Development Report will require coordination among various stakeholders, each with clear responsibilities:

- INDOT's Talent Management team: The Talent Management team serves as the lead department for this initiative. The Talent Management team (particularly those in training and workforce development roles) is responsible for defining report content, gathering and validating data, and authoring the report's narrative.

The Talent Management team will also coordinate the overall project timeline, convene meetings for feedback, and ensure that the report aligns with internal communication standards. After publication, the Talent Management team uses the report's findings to propose or adjust workforce development initiatives and will oversee any follow-up actions (such as launching new training programs to address gaps).

- **INDOT Information Technology (IT) and Data Team:** The IT department provides technical support to build and maintain the data infrastructure for this project. IT specialists or data analysts will assist in extracting data from HR systems (e.g., pulling data from SuccessFactors or other databases) and setting up the data repository.
- **Division Leadership and Subject Matter Experts:** Leaders and managers from INDOT's various divisions play a consultative role. During the report development, they provide input on what metrics are most relevant to their area and help interpret the data (for example, explaining the context behind a high turnover rate in a particular unit). They may need to supply or verify certain data points that are not centrally recorded (like specialized training records maintained at the division level). Once the report is available, division leadership is the primary consumer of this information: they are expected to review the findings, use insights to inform their unit's staffing and training decisions, and support agency-wide initiatives that the report might recommend.
- **INDOT Executive Leadership (Commissioner's Office):** The executive team acts as the sponsor and champion of the Workforce Development Report initiative. Executive leaders (such as the Commissioner, Deputy Commissioners) endorse the effort from the outset, ensuring it remains a priority. They provide strategic guidance on what high-level questions the report should answer and ensure cross-departmental cooperation if needed. Upon completion, they are the key audience for the report's conclusions, using the data to guide high-level decisions on policy, budgeting, and strategic direction for workforce development.
- **External Research Partner (e.g., University):** If INDOT continues its collaboration with academic partners (such as through the Joint Transportation Research Program with Purdue University), external experts can support the project by providing analytical expertise and an outside perspective. They might help design data analysis methodologies, conduct deeper statistical analyses (for example, calculating training return-on-investment or forecasting retirement trends), and co-review the report for rigor and clarity. While the content will rely on INDOT's internal data, an external partner can validate findings and share best practices from other organizations. Their role is advisory and supportive, ensuring that the report is comprehensive and grounded in sound analysis, without using any external benchmarking data.

5.4.3.5 Evaluation Metrics. To measure the success and impact of the Workforce Development Report initiative, INDOT will track a few key evaluation metrics:

- **On-Time Annual Publication:** The Workforce Development Report should be completed and released on schedule each year. For the inaugural report, meeting the planned publication date (as outlined in the timeline) will be a primary success indicator. In future years, consistent annual publication (e.g., every Q4 or by a specified month each year) demonstrates that the process is sustainable and institutionalized.
- **Management Engagement and Utilization:** This metric tracks how actively INDOT leadership and managers use the report.

Indicators include the number of times reports are downloaded, as well as qualitative evidence of the report's influence. For example, managers might reference statistics from the report in planning meetings or internal memos ("According to our Workforce Development Report, vacancy rates in engineering are X%, so..."). A successful outcome would be that multiple strategic decisions or resource allocations in the year following publication can be directly linked to insights from the report (such as launching a recruiting drive for roles with high retirement eligibility, or investing in training areas with low completion rates).

5.4.3.6 Supporting Tools and Templates. Implementing the Workforce Development Report will leverage several tools and templates to ensure consistency and efficiency:

- **Data Sources and Collection Systems:** The initiative will use existing INDOT systems as primary data sources. This includes the SAP SuccessFactors platform for training records (to obtain data on course enrollments, completions, and employee learning history) and the PeopleSoft HR database (for employee demographics, positions, tenure, etc.). Where certain required data is not readily available in these systems (for example, if qualitative feedback on training is needed), simple collection tools such as online surveys or Excel-based templates will be employed. Standardizing how data is pulled from these sources (through queries or export templates) ensures consistency each year.
- **Report Template and Design Standards:** The written Workforce Development Report will follow a predetermined template consistent with INDOT's branding and communication standards. A professional format will be established (in collaboration with INDOT's Communications office) for elements such as the cover page, section headings, tables, and charts. This template ensures that each annual report has a consistent look and feel. Content will likely be prepared in Microsoft Word or PowerPoint, using INDOT-approved fonts, colors, and logos. Additionally, guidelines for writing style (formal tone, clarity, avoiding jargon) will be provided to contributors to maintain a consulting-report style narrative throughout the document.
- **Publication and Distribution Platform:** INDOT's intranet (or a dedicated SharePoint site) will serve as the distribution hub for the Workforce Development Report. Once the report is finalized, it will be uploaded as a PDF to the intranet site where employees and managers can easily access it.

5.4.4 Recommendation 4: Digital Badges and Recognition Program

5.4.4.1 Objective and Alignment with INDOT Goals. INDOT is launching a digital badge and recognition program to reward employee accomplishments with symbolic, non-monetary rewards. The objective is to strengthen employee engagement and morale in a cost-effective way by acknowledging achievements such as training milestones, innovative ideas, exemplary customer service, and outstanding project contributions. This initiative addresses budget constraints that limit monetary awards, offering an alternative form of recognition that still motivates staff to excel.

INDOT's existing sticker culture demonstrates that symbolic rewards can be highly valued internally. The digital badge program builds on this cultural foundation to foster a continuous learning and high-performance environment. By formally

recognizing development and performance, the program aligns with INDOT's strategic workforce goals: improving employee satisfaction, encouraging professional growth, and retaining talent. In essence, this initiative supports INDOT's mission by empowering a motivated and skilled workforce, while reinforcing organizational values such as innovation, customer service, and teamwork.

5.4.4.2 Key Components (Deliverables)

- **Recognition Criteria and Badge System:** The program will establish a clear set of criteria for earning digital badges and points. INDOT will define multiple badge categories (e.g., Training Achievements, Innovation & Improvement, Safety & Customer Service Excellence), each linked to specific behaviors or milestones. For example, completing a required series of courses might earn a "Professional Development Champion" badge, while implementing a cost-saving idea could merit an Innovation Badge. A simple point system may complement the badges, allowing employees to accumulate points for smaller contributions or peer-to-peer commendations that can later translate into badge awards or other recognition.
- **Peer Nomination and Award Process:** A structured process will be put in place for employees to nominate their peers (or team members) for recognition. Using a standardized nomination form on the intranet, any staff member will be able to submit a colleague for a badge or points, citing the specific achievement or helpful action. The Talent Management team will review nominations to ensure they meet the established criteria and maintain fairness. This bottom-up nomination mechanism ensures that recognition is not solely top-down. It empowers coworkers to celebrate each other's contributions, building a supportive culture.
- **Platform Integration and Intranet Visibility:** The badge system will be fully integrated into INDOT's existing digital tools for ease of use. If possible, SAP SuccessFactors (INDOT's HR system) will be configured to record earned badges on employee profiles or learning histories. In addition, an internal SharePoint-based site or intranet page will serve as the recognition hub: a place where all awarded badges and point totals are displayed. This hub will function as a virtual showcase of employee achievements (a digital "Wall of Fame"), allowing staff to see who has earned recognitions across the agency. Integration with existing logins means employees can seamlessly access their badge information and managers can easily post and view recognitions without needing new software.
- **Communication and Recognition Displays:** An internal promotion strategy will support the program's launch and ongoing success. INDOT will produce regular communications highlighting recognition stories (e.g., periodic intranet news posts or emails that spotlight employees who recently earned badges, explaining their accomplishments). These public acknowledgments (with permission of the honorees) reinforce the value of the program and encourage others to participate. Additionally, offices and districts will have the option to create physical recognition displays (such as a bulletin board in a common area) to mirror the digital badges in the real world. The Talent Management team will supply printable badge certificates or lists of honorees that local offices can post, so that employees and visitors physically see evidence of the recognition program. This dual approach (digital and optional physical displays) maximizes visibility and reinforces appreciation both online and in the workplace.

- **Phased Pilot and Rollout Plan:** The implementation will begin with a focused pilot before scaling up. INDOT will select a specific pilot group (for example, one district office or a single department) to introduce the badge program on a trial basis. During the pilot, processes for nomination, approval, and badge issuance will be tested and refined with real user feedback. The pilot phase will help identify any adjustments needed in criteria or technology before investing in agency-wide deployment. After incorporating lessons learned, the program will then roll out to all INDOT units. A detailed rollout schedule will ensure each division and district is prepared (with training on how to nominate and use the system) and that there is adequate support as the program scales. By starting small and then expanding, INDOT can manage change effectively and build momentum through early successes.

5.4.4.3 Timeline

- **Quarter 1 (Q1) - Design and Preparation:** Design the recognition framework. In the first quarter, the Talent Management team (with support from Communications) will develop the foundation of the program. They will define the behaviors and achievements that warrant recognition, mapping out specific badge categories and point allocations. This includes creating the initial set of badge titles, descriptions, and graphical designs using in-house design resources. The Talent Management team will also outline the nomination and approval workflow in detail. By the end of Q1, the core program framework will be documented and ready for review. Deliverable (end of Q1): A comprehensive Recognition Program Framework document, including defined badge categories, award criteria, point system rules, and badge designs, prepared for leadership approval.
- **Quarter 2 (Q2) - System Development and Approvals:** Build and test the platform; obtain approvals. In the second quarter, the focus shifts to securing official approval and setting up the infrastructure. The Talent Management team will present the program plan (from Q1) to INDOT leadership for approval, ensuring it aligns with agency policies and receives executive endorsement. Concurrently, the Talent Management and IT teams will collaborate to configure the digital platform for the badges. For example, if using SharePoint, IT will set up a secure recognition page and database; if using SuccessFactors, they will explore enabling any available recognition/badge features. A pilot department or district will be identified during this time. The nomination form (e.g., an online SharePoint form or survey tool) will be developed and tested internally. Communications will finalize promotional materials and user guides in preparation for launch. By the end of Q2, the program should be technically ready and cleared to launch in a trial setting. Deliverable (end of Q2): Approved Pilot-Ready System, leadership approval obtained, and the digital badge platform (intranet page and nomination mechanism) is live internally, ready to roll out to the pilot group.
- **Quarter 3 (Q3) - Pilot Launch and Evaluation:** Execute the pilot program. At the start of Q3, INDOT will launch the recognition program in the selected pilot department/office. Employees in the pilot group will begin using the system: nominating peers for points or badges and receiving recognitions for the defined achievements. Throughout the quarter, the Talent Management team will closely support the pilot, gathering data and feedback. They will monitor participation rates (e.g., how many nominations are submitted, how many badges earned) and solicit qualitative feedback via short surveys or discussions to learn about user

experience and perceived value. Successes from the pilot will be celebrated and publicized. For example, the first badge recipients might be featured in an intranet story to highlight the program's value. Toward the end of Q3, the Talent Management team and stakeholders will evaluate the pilot results and identify any necessary improvements (such as clarifying criteria, adjusting the nomination process, or fixing technical issues). Deliverable (end of Q3): Pilot Report and Program Refinement, a summary of pilot outcomes and feedback, with recommended adjustments to the program design and processes in place for the full rollout.

- **Quarter 4 (Q4) - Full Rollout and Initial Results:** Agency-wide implementation. In the final quarter of the year, the refined digital badge program will be rolled out across all of INDOT. The Talent Management team will coordinate communication to all employees announcing the official launch of the recognition program agency-wide, including instructions on how to nominate colleagues and earn badges. During this quarter, training or informational sessions (brief webinars or presentations) will be offered to managers and staff to ensure everyone understands how to use the new system. The recognition platform will be opened to all divisions and districts, and employees will begin participating on a broad scale. The Communications team will amplify the launch with an internal campaign. For example, a special email from leadership introducing the program, and a kickoff story on the intranet highlighting the benefits and how to get involved. As nominations and awards start flowing in, the Talent Management team will track participation and address any questions or technical issues. By the end of Q4, the program should be fully operational and integrated into INDOT's culture of management. Deliverable (end of Q4): Full Program Launch Complete, the digital badge and recognition program is active across INDOT, with baseline metrics (e.g., number of badges awarded in the first months) collected to measure initial impact and to inform future evaluation.

5.4.4.4 Stakeholder Roles and Responsibilities

- **INDOT's Talent Management team:** The Talent Management team will serve as the primary owner and administrator of the digital badge program. The Talent Management team is responsible for developing and updating the badge criteria and points system, managing the nomination and approval process, and ensuring consistent, fair application of the recognition criteria across the agency. The Talent Management team will also coordinate any necessary policy changes or approvals (for example, making sure the program complies with state employee recognition guidelines). Additionally, Talent Management team will handle program oversight tasks such as maintaining the badge database, monitoring participation and results, and reporting on metrics to INDOT leadership.
- **Communications Team:** INDOT's Communications office (or internal communications specialists) will play a crucial support role by driving awareness and engagement. This team will assist the Talent Management team in designing the look and feel of the digital badges (to align with INDOT branding) and will create clear communication materials about the program. Key responsibilities include producing launch announcements, intranet articles, FAQs, and periodic updates (like newsletter features or success stories) that showcase the program's progress and highlight employees who receive awards. The Communications Team ensures that the recognition program is well-publicized and that employees understand how to participate.

- **Managers and Supervisors:** Managers at all levels are critical to the program's success as front-line champions of recognition. They are expected to actively participate by nominating employees (especially in cases of exemplary work or significant achievements) and by encouraging their team members to nominate peers. Managers and supervisors will also review and endorse nominations that come from their units, verifying that submissions are valid and worthy. Each division or district may appoint a Recognition Champion (a manager or designated employee liaison) who works with the Talent Management team to coordinate the program locally. These champions help monitor the program's use in their area, prevent any potential misuse or bias in giving out badges, and assist in organizing any local recognition efforts (such as posting names on a physical office badge board or handing out printed certificates). In short, managers and supervisors foster a positive environment that celebrates accomplishments and ensures the program is embraced throughout their teams.
- **Information Technology (IT) Support:** The IT department will provide technical support to implement and sustain the recognition platform. IT staff will help integrate the badge system with existing INDOT systems, which may involve creating a SharePoint site or intranet module to house the "Wall of Fame" and nomination form, or adjusting settings in SuccessFactors if applicable. They are responsible for the security and functionality of the platform (making sure, for example, that only authorized users can input or modify recognition data and that data is backed up as needed). If technical issues arise (such as access problems or integration hurdles), IT will troubleshoot and resolve them. They may also assist in generating usage reports from the platform if needed for analysis.
- **Executive Leadership:** INDOT's senior leadership (executives such as the Commissioner, Deputy Commissioners) will act as sponsors and champions for the program. Their role is to visibly endorse the digital badge initiative, reinforcing its importance. For example, an executive sponsor might introduce the program in a department-wide meeting or internal memo or personally congratulate employees who earn significant badges. Leadership might also participate in recognition rewards (such as hosting the informal "lunch with an executive" for top achievers, if that perk is offered, or attending an annual recognition ceremony if one is held). By actively supporting and participating, the executive team sets a tone from the top that non-monetary recognition is a valued part of INDOT's culture.

5.4.4.5 Evaluation Metrics. To evaluate the effectiveness of the digital badges and recognition program, INDOT will track a few key performance indicators:

- **Employee Participation Rate:** The percentage of employees actively engaging in the program is a primary measure of success. INDOT will monitor what portion of the workforce receives at least one badge or formal recognition within a given period (e.g., quarterly or in the first year). For instance, the goal might be to have at least 30% of employees earn a badge or recognition in the program's first year, gradually increasing in subsequent years. A growing participation rate over time will indicate that the program is gaining traction and becoming embedded in the agency's culture.
- **Recognition Coverage and Frequency:** This metric ensures that recognition is happening consistently across the organization. INDOT will track the number of badges awarded and nominations submitted per quarter, broken down by division or district.

If certain areas have low activity, the Talent Management team can identify those gaps and provide additional encouragement or training. Consistent recognition frequency (e.g., a steady increase in badges awarded quarter over quarter) will demonstrate that the program remains active and is not a one-time novelty.

- **Employee Feedback and Satisfaction:** Qualitative and quantitative feedback from staff will be used to assess how the program impacts morale. INDOT's annual employee engagement survey will include questions related to recognition (for example, agreement with the statement, My work is recognized and appreciated by INDOT). An improvement in the positive response rate to this question after the program's implementation will signal that employees feel more valued. Additionally, the Talent Management team may conduct brief pulse surveys or focus groups specifically about the badge program to gather input on its perceived fairness, usefulness, and any suggestions for improvement. High satisfaction and positive comments (e.g., employees sharing that they appreciate the badges) would indicate that the recognition is meaningful to staff. Over the longer term, INDOT can also watch for indirect indicators such as improvements in staff retention or performance metrics in groups with high participation, although those may be influenced by many factors.

5.4.4.6 Supporting Tools and Templates. A variety of existing tools and new templates will support the implementation and ongoing management of the digital badge and recognition program:

- **Integrated Digital Platforms:** The program is designed to leverage INDOT's current technology infrastructure without requiring new software purchases. SAP SuccessFactors (the HR system) will be utilized to the extent possible — for example, to track training completions that correspond to certain badges or to display earned badges on an employee's profile if that functionality is available. In parallel, SharePoint/Intranet will serve as the central hub for the recognition program. A dedicated intranet page (or site) will host the "Wall of Fame" listing recent badge recipients, provide access to the nomination form, and house information about the program (criteria, how-to guides, etc.). All INDOT employees will be able to access this hub with their existing credentials. By using familiar platforms, the program minimizes the learning curve and IT overhead.
- **Nomination Form and Tracking Database:** A user-friendly online nomination form will be created (likely a SharePoint form or an MS Forms/InfoPath survey) to collect peer nominations. This form will automatically feed into a secure list or database that the Talent Management team can use to track nominations, approvals, and badge awards. The tracking system will record key data such as who was nominated, the reason, the badge or points awarded, and dates. This simple database (which could even be exported to Excel or integrated with an existing HR database) will enable the Talent Management team to monitor program activity and generate reports for evaluation. It also ensures transparency and record-keeping for each recognition issued.
- **Badge Design Assets and Certificates:** INDOT will develop a library of digital badge icons/images for each type of badge. These badge graphics will be created using internal design resources to ensure they are visually appealing and consistent with INDOT's branding (e.g., using INDOT colors or incorporating a small agency logo in the badge design). Alongside the digital badges, the Talent Management team will prepare a standard certificate template that can be used if the program includes

printable certificates or awards. This template would include the employee's name, the badge of honor received, the date, and signatures from leadership, formatted professionally with INDOT's logo. Having these design assets and templates ready will make it easy to issue recognition in both digital and physical formats.

- **Communication Templates and Guides:** To streamline rollout and keep messaging consistent, a set of communication templates will be prepared. These will include: an announcement email or memo from leadership to introduce the program to all staff; a step-by-step user guide (or FAQ document) explaining how to nominate someone and how to check one's own badges; and a template for a regular "Recognition Round-Up" update (such as a quarterly intranet news article or newsletter section that lists recent badge recipients and their stories). Managers will also receive a concise briefing or checklist on their role in the program (for example, a one-page tip sheet on how to encourage nominations and approve them). By providing ready-made templates and guides, INDOT ensures that everyone knows how to participate and that communications about the program remain clear and enthusiastic.

5.4.5 Recommendation 5: Early-Career Micro-Learning Pathways and Role-Based Training Catalogs

5.4.5.1 Objective and Alignment with INDOT Goals.

This implementation plan combines two complementary workforce development initiatives (Early-Career Micro-Learning Pathways and Role-Based Training catalogs) into a unified program. The objective is to provide differentiated training based on an employee's career stage, ensuring that new hires receive structured foundational learning while mid- and senior-level staff have clear pathways for ongoing, role-specific development. By aligning training content and format to career stages (early, mid, senior), INDOT can accelerate onboarding for early-career employees and foster continuous skill growth for experienced personnel.

This plan directly supports INDOT's strategic goals of strengthening its talent pipeline and enhancing employee capabilities. It ensures that workforce training is cohesive and aligned with INDOT's mission and evolving needs. The approach emphasizes cost-effective implementation by leveraging existing systems (e.g., SuccessFactors LMS and intranet) and cross-department collaboration. By standardizing onboarding and guiding professional growth, INDOT will improve employee engagement, retention, and readiness to meet future transportation challenges.

5.4.5.2 Key Components (Deliverables). The unified training initiative will produce several key components:

- **Early-Career Micro-Learning Pathway Program:** A structured set of short online learning modules (15–30 minutes each) covering essential topics for new employees, paired with on-the-job training checklists. This pathway will standardize onboarding across the agency, ensuring every early-career hire gain core knowledge (e.g., INDOT overview, safety practices, basic job-specific skills) and practical experience in their first few months.
- **Role-Based Training catalogs:** A series of curated training catalogs for all major INDOT role groups (engineering, maintenance, project management, technical specialists, administrative/leadership, etc.). Each catalog will list recommended courses, programs, and certifications relevant to that role or career track (including INDOT internal training offerings, external courses

like NHI or Purdue programs, and leadership development opportunities). These catalogs will reside on the INDOT intranet and be updated semi-annually to remain current.

- **Integration with Onboarding and IDPs:** Updates to INDOT's onboarding process and Individual Development Plan (IDP) templates to embed the new training resources. New hires' onboarding schedules will include required micro-learning modules and checklist activities. For existing employees, the annual IDP process will be linked with the role-based catalogs, encouraging staff and supervisors to incorporate catalog-recommended training into their development plans.
- **Maintenance and Update Plan:** A defined process for content maintenance. The micro-learning modules will have assigned owners for annual review and updates (to reflect policy or procedure changes). The role-based catalogs will be refreshed twice per year, with the Talent Management team and subject-matter experts adding new relevant courses and removing or revising outdated information. This ensures the program remains a living, up-to-date resource.
- **Communication and Engagement Resources:** Introduction of supporting materials such as quick-start guides and communication briefs. A launch communication will be prepared (e.g., an agency-wide email and intranet announcement) to inform all employees about the new pathways and catalogs. User guides or FAQ documents will help employees and managers understand how to access the micro-learning modules, use the on-the-job checklists, and navigate the training catalogs for their role.

5.4.5.3 Timeline. The implementation will be phased over the course of one year, with a major deliverable each quarter:

- **Quarter 1 (Q1) - Planning and Design:** Establish the foundation for both components. In this quarter, the Talent Management team and division experts will map out the micro-learning curriculum for new hires and define the role groupings for the training catalogs. Key deliverables by end of Q1 include a finalized list of essential onboarding topics (with learning objectives for each micro-module) and an outline of catalog categories for various job roles. Ownership for each content area or catalog section will be assigned to specific team members. This planning stage ensures clear scope and objectives for development.
- **Quarter 2 (Q2) - Content Development:** Develop pilot content for the micro-learning modules and initial drafts of each role-based catalog. By the end of Q2, at least 4 ~ 6 micro-learning modules (with their on-the-job checklists) will be created and uploaded to the LMS in a test setting. Simultaneously, the project team will compile draft training catalogs for each identified role cluster, listing available training options. Mid-quarter reviews with key stakeholders (SMEs and sample end-users) will be conducted to gather feedback on module content and catalog completeness. Deliverables for Q2 include the pilot micro-learning module set and draft catalogs ready for review.
- **Quarter 3 (Q3) - Pilot Launch and Refinement:** Implement the program on a pilot basis and refine the offerings. In Q3, a cohort of new hires (for example, in one district or department) will go through the micro-learning pathway and on-the-job checklists as part of their onboarding. Concurrently, the role-based training catalogs will be published on the intranet in beta form, and a sample group of employees/managers will be encouraged to utilize them for development planning. Feedback will be collected via surveys and meetings. By the end of Q3, the micro-learning content and catalogs will be refined based on real user input (e.g., adjusting module difficulty or adding missing training resources

to catalogs). The key deliverable is a validated pilot: evidence that the modules are effective and the catalogs are user-friendly, along with a list of improvements implemented.

- **Quarter 4 (Q4) - Full Rollout and Evaluation:** Expand the program to all relevant staff and institutionalize it. In Q4, the early-career micro-learning pathway becomes a standard part of INDOT's onboarding for all new employees statewide. The Talent Management team will formally incorporate module completion into new hire requirements and educate all supervisors on their role in the process. Simultaneously, the finalized role-based training catalogs will be rolled out agency-wide via an intranet launch, with an announcement encouraging all employees to review and use them. Initial evaluation metrics will be collected toward the end of Q4 (such as new hire module completion rates and catalog page visit counts) to establish a baseline. The deliverable for Q4 is the full implementation of the program across INDOT, with mechanisms in place for ongoing support and annual updates.

5.4.5.4 Stakeholder Roles and Responsibilities. Successful implementation will require coordination among various stakeholders, each with clear responsibilities:

- **INDOT's Talent Management team:** The Talent Management team will lead the project, serving as the overall coordinator. The Talent Management team will project-manage content development (ensuring modules and catalogs are created on schedule), integrate the new materials into onboarding processes, and maintain the training catalogs long-term. The Talent Management team will also handle communication and change management, informing employees and managers about new requirements and resources.
- **Division Subject Matter Experts (SMEs):** Experienced staff from each major division (e.g., Construction, Maintenance, Engineering, IT, Finance) will contribute expertise. SMEs will help identify essential topics for new hire training, create or review micro-learning content for accuracy, and recommend valuable courses or certifications for the role-based catalogs. They ensure the content is relevant to actual job needs and up-to-date with industry standards.
- **IT and LMS Administrators:** Information Technology staff (especially those administering the SuccessFactors LMS or intranet) will support technical aspects. They will assist in uploading and configuring the micro-learning modules in the LMS (ensuring they are accessible and trackable), and in setting up the intranet pages or document library for the training catalogs. IT will ensure that all employees can easily access the content and will troubleshoot any technical issues.
- **Supervisors and Mentors:** INDOT line managers and supervisors play a critical frontline role. For early-career hires, supervisors will make time for their new employees to complete the required micro-learning modules and will oversee the on-the-job checklists (signing off on tasks and providing coaching). For existing staff, supervisors will use the role-based catalogs during performance and development discussions, helping team members select training opportunities. In some cases, mentors may be assigned to new hires to reinforce learning and guide them through the pathway.
- **Executive Leadership and Budget Officers:** INDOT leadership will champion the initiative, ensuring it remains a priority and that necessary resources are allocated. Their role is to endorse the program, include it in strategic workforce plans, and monitor its progress. Budget/finance officers will manage any funding requirements for external training identified in the catalogs (such as tuition for courses or travel for seminars), aligning these opportunities with available training budgets.

- **External Partners** (e.g., Purdue University, FHWA, Training Providers): While not internal staff, external partners are valuable resources. Purdue’s faculty members can support the creation of high-quality e-learning modules. External training providers (like the National Highway Institute or professional associations) supply many of the courses listed in the catalogs; INDOT will coordinate with them as needed (for information, group enrollments, or customized offerings). These partners ensure the content and opportunities in the program reflect broader industry best practices and learning opportunities.

5.4.5.5 Evaluation Metrics. To measure the success of the combined micro-learning and training catalog program, INDOT will track a few key performance indicators:

- **Onboarding Training Completion Rate:** Percentage of new hires who complete all required micro-learning modules (and associated checklists) within their first 60 days. The target is near 100% completion, indicating that the modules are effectively integrated into onboarding and that supervisors are providing time for training. Consistently high completion rates will demonstrate successful adoption of the new onboarding process.
- **Training Catalog Utilization:** Usage of the role-based catalogs by employees and managers. This can be measured by intranet analytics (e.g., number of catalog page views or downloads) and by the proportion of Individual Development Plans that reference at least one catalog-recommended training. For example, INDOT can aim for a majority of mid-level staff IDPs (say, 50 ~ 70%) to include development activities drawn from the catalogs after the first year. Growing usage over time will show that employees are finding the catalogs helpful for planning their growth.
- **Employee Development and Retention Outcomes:** Over the longer term, INDOT will monitor indicators like new hire retention rates and internal promotion rates. An increase in 1-year retention of employees who went through the micro-learning pathway (compared to prior onboarding cohorts) would suggest that the enhanced onboarding is improving engagement. Similarly, if more vacancies are being filled by internal candidates over time, it may indicate that staff are better prepared for advancement (thanks in part to the development opportunities highlighted in the catalogs). While many factors influence retention and promotion, positive trends in these metrics will be a strong sign of the program’s impact.

5.4.5.6 Supporting Tools and Templates. Several tools and templates will support the rollout and maintenance of the training pathways and catalogs:

- **Micro-Learning Module Template and Checklist Forms:** A standardized content template will be used to develop each micro-learning module (including sections for learning objectives, content slides or video, and a short quiz). Alongside this, a uniform on-the-job training checklist format will be provided for supervisors to document and verify hands-on skill demonstrations. These templates ensure consistency in module development and in how on-the-job tasks are structured and tracked.
- **Individual Development Plan (IDP) Template Updates:** The existing IDP form or system will be updated to include prompts or sections for training catalog entries. For instance, the IDP template can have a field where an employee lists a course or certification from the catalog as a development goal. Guidance will be given to supervisors on using the catalogs during IDP discussions.

This template update embeds the new resources directly into the annual development planning workflow.

- **Intranet Portal for Training catalogs:** An easy-to-navigate intranet page or SharePoint site will host the role-based training catalogs. It will serve as a central “Career Development” hub where employees can select their role group and view/download the relevant catalog. This portal will use a consistent page design for all catalogs, and the Talent Management team will have edited access to update these pages semi-annually.
- **LMS Integration and Tracking Tools:** The SuccessFactors Learning Management System will be utilized to deploy the micro-learning modules. A simple admin job aid will be provided to the Talent Management team on how to assign modules to new hires and track completion in the LMS. Existing reporting functions in SuccessFactors (or a basic Excel tracker) will be used to monitor module completion rates and quiz scores for evaluation purposes. No new software is required; instead, the plan leverages and optimizes current tools.
- **Communication Templates:** To ensure smooth adoption, a set of communication tools will be prepared. This includes an announcement email template to introduce the program to all employees, a slide deck or handout that managers can use to brief their teams, and an FAQ document addressing common questions (e.g., “How do I access my role’s training catalog?” or “What if a new hire cannot complete a module on time?”). These templates will help deliver a consistent message and provide practical guidance, building awareness and buy-in for the new training system.

6. CONCLUSIONS

Task A analyzed the engagement survey results for the years 2022–2024. Based on the engagement survey results, employees perceive compensation as the lowest rated while manager and job satisfaction metrics are highly rated. Additionally, the workforce development is one of the most important aspect of employment for employees as reported by workers as well as recruiters. Workforce development opportunities at an organization can attract and retain employees. INDOT has many training courses available on its LMS, but employees have reported that they are not easy to find and not always available. Employees can have negative sentiment towards training that does not help them advance in their career or help them grow. Therefore, it is important to ensure the training courses and other development resources available are in line with what the employees want. Some employees perceive certain training as not required or helpful, hence, it is necessary to determine frequency and method of delivery for all training available and provided to the employees on a regular basis. A traditional LMS that is outdated and not user friendly can make employees uninterested and demotivated towards training. With new, innovative technology and methods available, LMS can be made more engaging for the employees. Companies across different industries and several neighboring state DOTs are investing heavily in workforce development and making trainings available to employees, using the public and private resources that are available in the state.

Task B (Chapter 4) examined workforce turnover at INDOT by analyzing workforce outlook, recruitment and termination data, and exit surveys. (1) Numerical analysis results showed

three main findings. First, turnover had an unusually high level from 2021 to 2023, with Highway Technicians affected the most, especially in the LaPorte District. Second, workplace experience varied across demographic groups. For example, older employees reported the most positive experiences, while mid-age employees and female staff expressed lower satisfaction in several areas. Black employees reported higher satisfaction with workload and resources, while White employees felt less valued. Intermittent staff showed greater overall satisfaction than regular employees except for benefits, and early-career employees' satisfaction declined after six months. Job role comparisons indicated that Highway Technicians, Engineers, and Executives/Directors reported the lowest workplace satisfaction, while interns and seasonal workers rated the highest. Third, compensation, Personal Reasons, and Growth Opportunities were cited by departed employees as the top three main reasons for leaving. The three high-impact exit factors (Compensation, Personal Reasons, and Growth Opportunities) also showed variations across age, district location, ethnicity, highest education level, gender, and tenure groups. (2) Textual analysis results showed three main findings. First, fourteen themes related to turnover were identified from the comments of departed employees and categorized into different impact levels based on their frequency across six survey questions. Second, Immediate Supervisor was identified as the high-impact theme, which appeared in all six questions; mid-impact themes of Job Duties, Culture, Compensation, Senior Leadership, and Growth Opportunities appeared in three or four questions; and low-impact themes of Resources, Schedule, Workload, Communication, Job Security, Expectations vs. Reality, Personal Reasons, and Emotional Ambivalence appeared once or twice. Third, pay was a common concern across all demographic groups, but different demographic groups also had distinct concerns.

Task C concludes that INDOT has a motivated workforce that values professional growth, but the current training portfolio does not sufficiently match high demand for role aligned and practical content, and participation is constrained by time. The most material deficits are in project management and in data and software skills, while organizational support is perceived as average with unclear rewards. The practical implication is to recalibrate offerings toward relevant, department specific and hands-on courses, provide protected time to train, and strengthen multi-channel communication so employees can find and complete training that closes measurable gaps. These conclusions form the evidence base and priorities that Task D operationalizes.

Task D concludes that a one-year, sequenced program centered on communication, curriculum governance, reporting, recognition, and early career structure is feasible and directly addresses the documented barriers and gaps. By institutionalizing a Curriculum Advisory Board and an annual Workforce Development Report, and by improving visibility and incentives through alerts and badges, the plan is expected to increase participation, reduce the largest skill gaps in project management and data skills, and improve satisfaction, retention, and internal advancement. The defined metrics enable leadership to verify outcomes and adjust where needed.

7. RECOMMENDATIONS

Based on the findings in Task A, the following are the recommendations:

- Address the employee sentiments based on trends identified in the engagement survey. Improve compensation and benefits provided to employees as it is the lowest rated factor.
- To offset the poor perception of compensation, workforce development can be prioritized as it is viewed highly by the general workforce.
- Update and revamp the training courses and market the resources available to employees in a way that the resources are available for employees.
- Develop other modes of training and delivery of training courses in addition to traditional offline and online courses available on LMS. Some advanced methods of delivery have proved to be effective in terms of retention and increased performance metrics.
- INDOT needs to invest in workforce development, collaborating with existing agencies to take leverage of the available resources.

Following are the recommendations for Task B:

- The recommendations from the numerical analysis are as follows:
 - First, retention efforts should focus on Highway Technicians, especially in LaPorte District.
 - Second, concerns about workplace experience should be addressed among specific demographic groups. Specifically, employees aged 60+ and those 40–49 should be interviewed to understand reasons for high and low satisfaction, and practices that improve experiences for Black employees should be expanded while addressing concerns of White employees. Promotion and benefit opportunities for female employees need improvement, while benefit factor of intermittent workers and all other eight factors of workplace experience of regular workers should be addressed. Onboarding should be strengthened to sustain satisfaction beyond the first six months, and best practices from Vincennes should be shared statewide while investigating low-scoring districts. Challenges facing Executives and Directors should be examined to improve their retention.
 - Third, employee retention can be improved by strengthening compensation, enhancing support for personal needs, and expanding growth opportunities, which were the top main reasons for leaving. INDOT needs to tailor strategies to different demographic groups by considering age, gender, tenure, and work location.
- The recommendations from the textual analysis are as follows:
 - First, INDOT needs to prioritize improving the high-impact theme (Immediate Supervisor) through strengthened leadership training, accountability systems, and regular supervisor feedback.
 - Second, INDOT needs to address mid-impact themes and monitor low-impact themes.
 - Third, INDOT needs to develop targeted retention strategies that address the unique concerns of different employee demographic groups.

Following are the task C and D's Recommendations:

- Communication Strategy
 - Deploy training alerts through SuccessFactors with mobile push or SMS and embed a brief workforce development update in district and unit meetings each month. Track on time completion rates and meeting coverage to assess impact.

- Launch a SharePoint idea portal with clear moderation and feedback and set quarterly targets for submissions and implemented ideas to encourage participation.
- Equip supervisors with concise monthly talking points and simple templates so that key messages reach frontline teams consistently and invite two-way feedback.
- Curriculum Advisory Board (CAB)
 - Approve a formal charter, seat a diverse board of internal experts and select external advisors, and convene meetings on a semiannual schedule.
 - Use a standard review template to prioritize updates in high need areas and deliver at least three to five significant course updates or new offerings per year.
 - Integrate CAB recommendations into the annual training plan and budget cycle and publish a short summary of actions taken for transparency and accountability.
- Workforce Development Report
 - Define a stable set of metrics that combine SuccessFactors learning data with HR workforce data, including a training gap index by skill area.
 - Publish the report by the fourth quarter each year and use the findings to set next year priorities for course development, delivery format, and resource allocation.
 - Monitor leadership utilization through citations in planning documents and track year over year changes in participation, completion, and gap closure.
- Awards and Recognition
 - Implement a digital badge program with peer nomination, clear criteria, and an intranet wall of fame, and integrate badges into SuccessFactors learning histories where feasible.
 - Link badges to individual development plans and recognize achievements in monthly communications to increase motivation and visibility.
 - Track participation rate, distribution across districts and divisions, and employee sentiment to refine criteria and communication.
- Early Career Fundamentals Program
 - Standardize onboarding with short online modules of 15 to 30 minutes and paired on the job checklists and require completion within 60 days.
 - Publish role-based training catalogs and refresh them twice per year so employees and supervisors can select relevant development paths during annual planning.
 - Track module completion and catalog usage analytics and adjust content and sequencing to improve early career readiness and progression.

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APPENDICES

Appendix A. Key Aspects on Workplace Experience

Appendix B: Definitions of Key Terms

Appendix C. Supplementary Figures and Tables for Section 2.2.2

Appendix D: Rating Items on Exit Factors from the Exit Survey

Appendix E: Comments from Departing Employees in the Exit Survey (Open Questions)

Appendix F: Figures From Section 2.2.4

Appendix G: Figures From Section 2.3

Appendix H: Figures From Section 2.4

Appendix I: INDOT Training Vendors

Appendices References

Appendix A. Key Aspects on Workplace Experience

Table A.1 Key Factors and Aspects on Workplace Experience From Exit Survey.

Factors	Questions	Key Aspects
Culture	Employees were treated fairly (regardless of their race, gender, age, sexual orientation, etc.)	Perceived fairness
	My team worked well together	Good teamwork
	I felt valued as an employee	Feeling valued
	I would recommend the organization as a good place to work	Recommend working here
	My ideas and suggestions were given consideration	Ideas were heard
Job Satisfaction	I liked the type of work I did	Enjoyed work
	I received adequate training to be successful at my job	Training was enough
	I had enough freedom in making decisions to do my job effectively	Freedom of making decisions
	The organization supported me in maintaining a work/life balance	Organization support in Work/life balance
	The amount of work I was expected to do was reasonable	Reasonable workload
	I had the resources and equipment I needed to be successful at my job	Had the resources workers needed
	The reality of my job matched the expectations I had when I was hired	Job met workers expectations
Manager	My manager clearly communicated expectations for my performance	Clear expectations
	My manager gave me useful feedback on my performance	Useful feedback
	My manager provided recognition for good work	Recognition for good work
	My manager held people accountable for results	Held people accountable for results
	My manager was effective in resolving issues	Resolved issues well.
	My manager treated employees with respect	Treated with respect
	I trusted my manager	Trust in manager
Senior Leadership	There was sufficient communication from Executive Leadership	Sufficient communication from Executive Leadership
	Executive Leadership communicated a clear vision for the organization's future	Clear vision
	The Executive Leadership's actions showed they valued their employees	Valued employees

Communication	I was kept informed about matters that affected me	Kept informed
	I was satisfied with the communication in my department	Good communication in department
	Communication between departments was effective	Effective communication between departments
Growth and development	I was provided with opportunities to grow professionally	Opportunities to grow
	I had someone at work who encouraged my professional development	Supported promotional growth
	I felt I had the opportunity to be promoted	Promotion chances
Compensation	I was paid fairly for the work I did	Fair pay
	I was paid fairly compared to others at the organization doing similar with similar experience	Fair pay compared to peers
	My compensation was competitive with similar organizations in the area	Competitive pay
Benefits	The benefits package met my needs	Benefits met workers needs
	My benefits were competitive with similar organizations in the area	Competitive benefits
	My benefits were clearly communicated so that I understood them	Clear benefits info
Rehire Potential	I would consider returning to the organization	Would return here
	I would consider returning to the same manager	Would work with the same manager

Appendix B. Definitions of Key Terms

Table B.1 Definitions of Key Terms.

Term	Definition	Explanation in this study
All terminations	Termination or dismissal refers to ending an employee's job, either temporarily or permanently. It can happen at the employee's request or be initiated by the company (Ambiyah et al., 2024).	Anyone who has left INDOT/state employment altogether.
Demotions	Demotion means moving to a lower position within an organization, which usually involves a real or perceived loss of authority or responsibility. It may happen with or without a salary decrease (Carson & Carson, 2007; Hennekam & Ananthram, 2020).	Employees who voluntarily moved into a position that is in a lower salary grade than their previous position.
Emotional ambivalence	Emotional ambivalence is a complex mix of positive and negative affect/emotions, and it influences how employees proactively perform their roles in the workplace (Shiota et al., 2021; Wang et al., 2023). For example, Wang et al. (2023) asked employees to indicate the extent to which they experienced specific positive affective experiences (e.g., excited and enthusiastic) and negative affective experiences (e.g., upset and nervous) during the past month.	In this study, emotional ambivalence is a theme extracted from individual employees' comments using the NLP methods, reflecting both positive and negative comments expressed by the same person toward INDOT. For example, one employee expressed that while he felt happy with the actual work, he felt stressed by the direct supervisor's management style.
Exit factor	Exit factors are the causes contributing to employee turnover, which should be identified through structured exit interviews to guide managerial actions (Neal, 1989).	The exit factor in this study refers to a concern that impacts an employee's decision to leave. There are 13 exit factors, including Compensation, Benefits, Immediate Supervisor, Senior Leadership, Job Duties, Growth Opportunities, Schedule, Workload, Culture, Communication, Job Security, Expectations vs. Reality, and Personal Reasons.
External pay inequity	External pay inequity means that an employee perceives they are being treated unfairly compared to comparable individuals outside the organization (Khalifa & Truong, 2011).	In this study, external pay inequity refers to concerns from employees who feel their compensation differs from that of individuals in outside organizations.

Factor of Workplace Experience	Factor, also called dimension or construct, refers to a theoretical concept, which cannot be measured directly but can be measured/represented indirectly by one or more indicators (Chen et al., 2016; Hair, 2009).	A dimension of workplace experience that includes multiple measurable key aspects. There are 9 factors, as listed in the first column in Table A.1: Culture, Compensation, Benefits, Job Satisfaction, Manager, Senior Leadership, Communication, Growth and Development, and Rehire Potential.
Involuntary demotion	Involuntary demotion refers to a demotion that the employee did not request (Carson & Carson, 2007).	The demotion is not by an employee's choice but is determined by the agency.
Involuntary termination	Involuntary termination, also known as involuntary job loss or involuntary turnover, refers to a situation where a person is dismissed or laid off from their job against their will, as opposed to leaving voluntarily (Gottschalk & Maloney, 1985; Leana & Ivancevich, 1987; Medoff & Abraham, 1981).	The termination of an employee is determined by an agency instead of the employee.
Internal pay inequity	Internal pay inequity is the extent to which an employee perceives he or she is treated unfairly relative to comparable others inside the organization, in terms of salaries, fringe benefits, promotion opportunities, recognition, salary raises, and status (Khalifa & Truong, 2011).	In this study, internal pay inequity refers to concerns from employees who feel their compensation differs from that of individuals within the same organization.
Intermittent workers	Intermittent workers are those who move in and out of the workforce unpredictably and often change jobs (Malenfant et al., 2007). They usually lack a stable, ongoing employment relationship with a single employer (Malenfant et al., 2007).	Workers who can only work up to 180 days per year.
Key Aspects of Workplace Experience	Aspect is one part of a situation, problem, or subject (Cambridge University Press, n.d.).	Key aspects are the specific, measurable components within each factor of workplace experience. There are 37 key aspects total across all factors, as listed in the third column in Table A.1.
Long Term Disability	INDOT State Personnel Department define it as "If an employee is continuously disabled six (6) months after the disability began, they may be eligible for Long-Term Disability. No reapplication is needed, but	This study uses the definition provided by the INDOT State Personnel Department.

	updated medical information may be requested. For the first two years of LTD, the basic benefit is fifty (50) percent of the base biweekly gross salary, and forty (40) percent during the third and fourth year. This is the gross benefit amount, before taxes and insurance.” (INDOT State Personnel Department, 2024).	
Theme	Theme is a key feature identified or evaluated from a set of reviews within a dataset (Dandekar & Pethe, 2022).	The theme is an underlying subject or central topic extracted from employees’ comments using the NLP method, reflecting the top concerns behind employee departures.

Appendix C. Supplementary Figures and Tables for Section 2.2.2

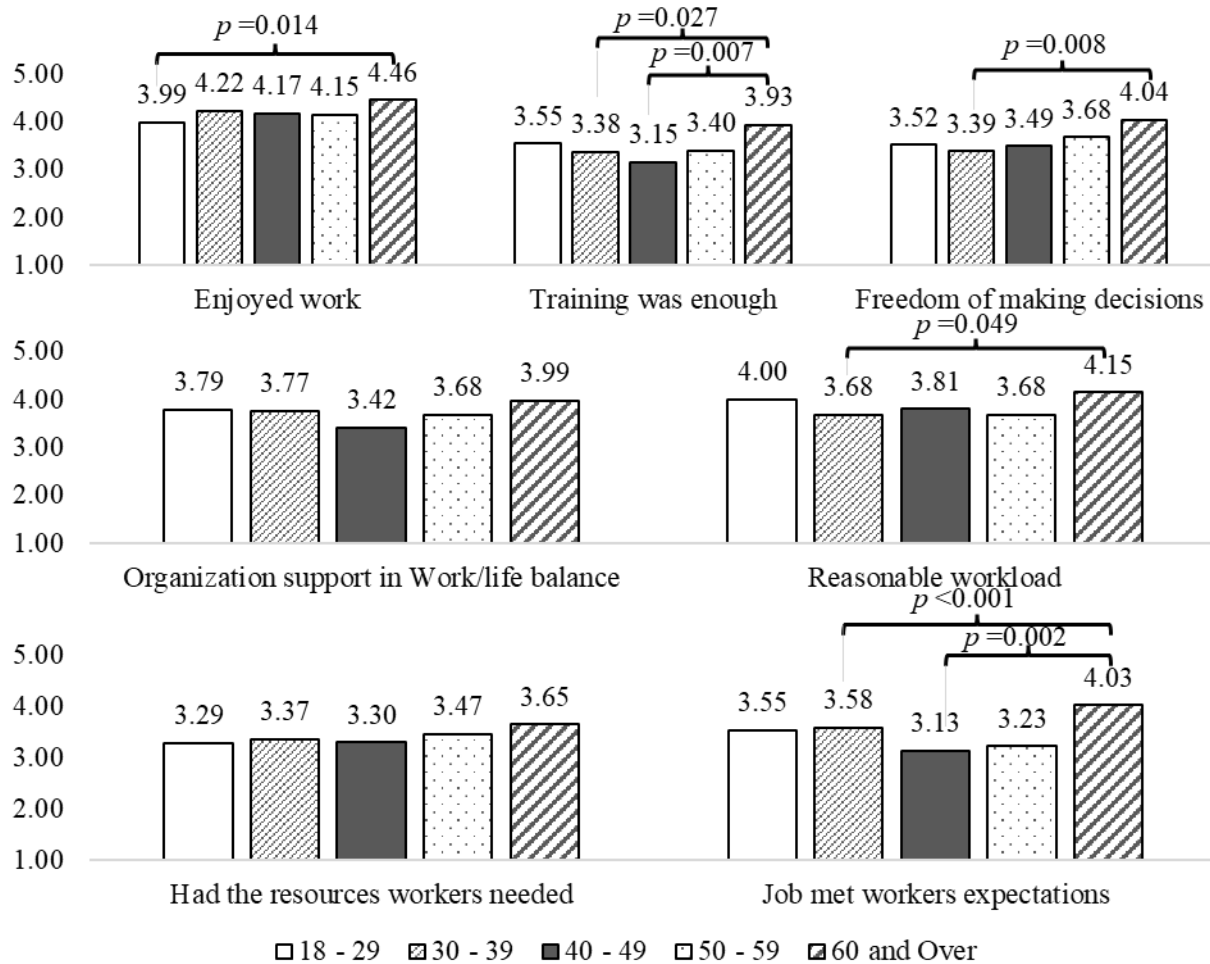


Figure C.1 Job Satisfaction by Age.

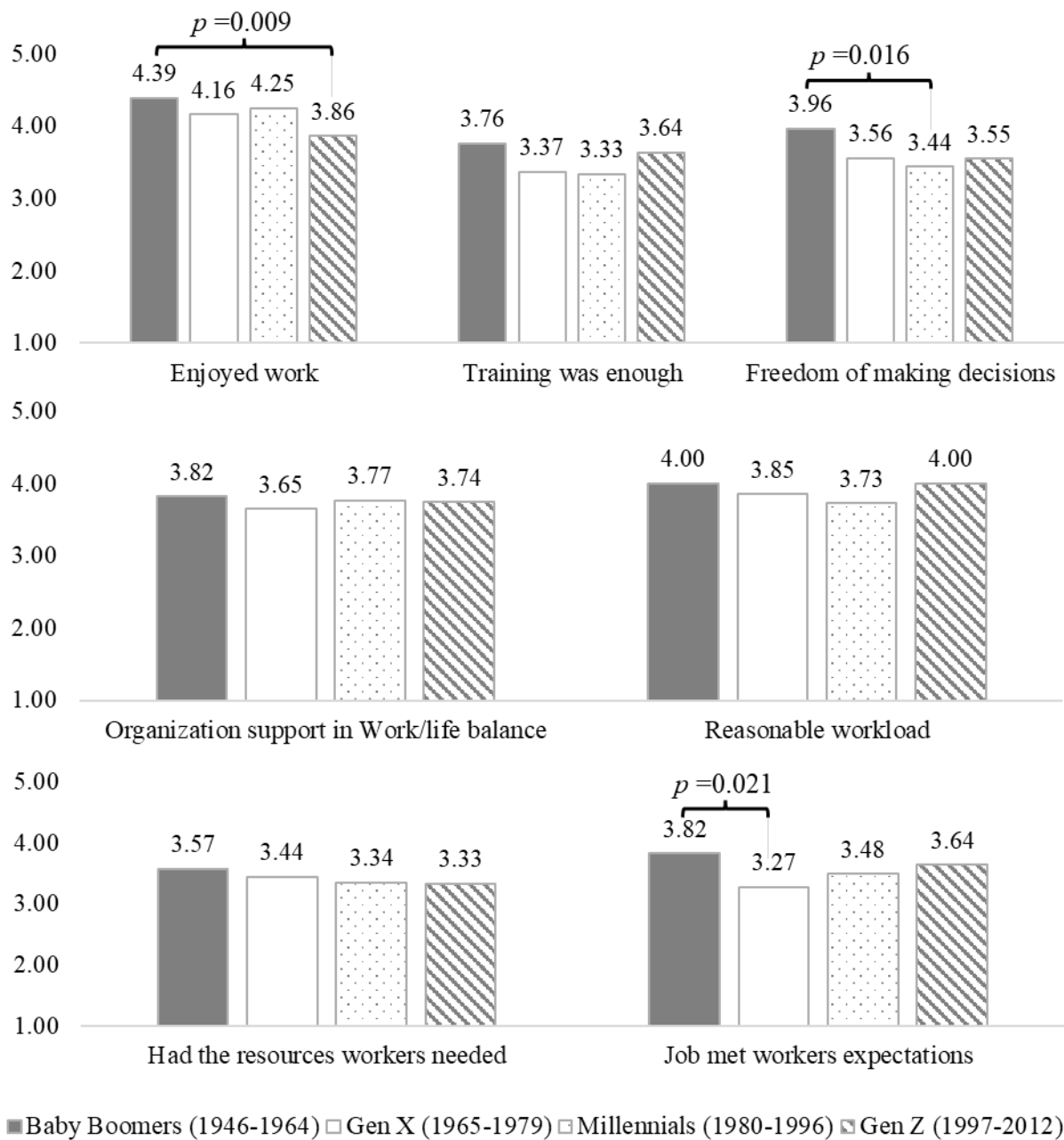


Figure C.2 Job Satisfaction by Generation.

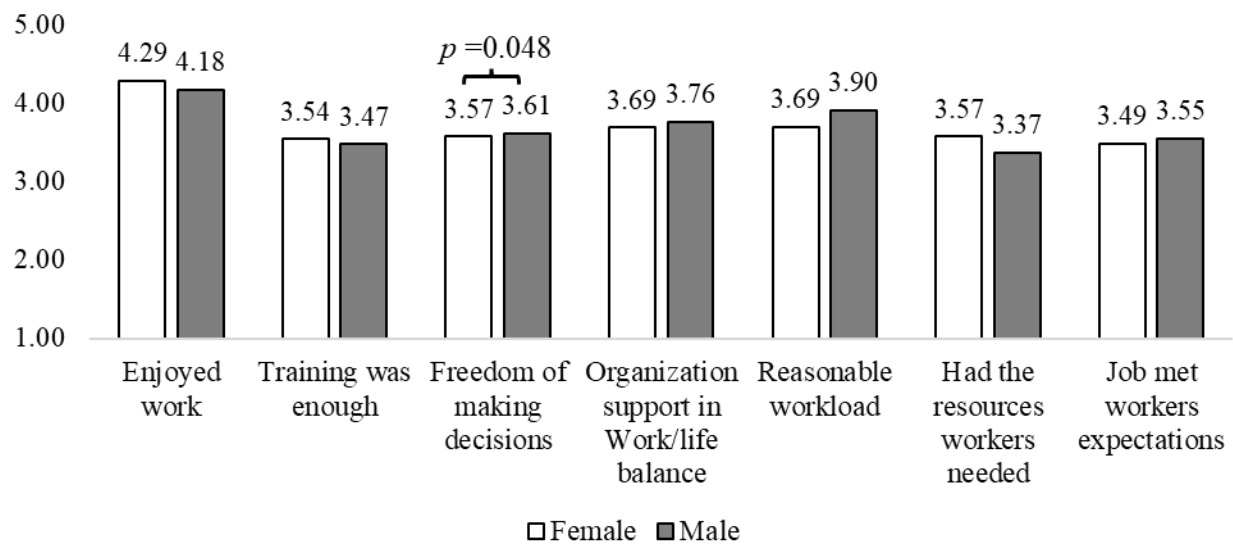


Figure C.3 Job Satisfaction by Gender.

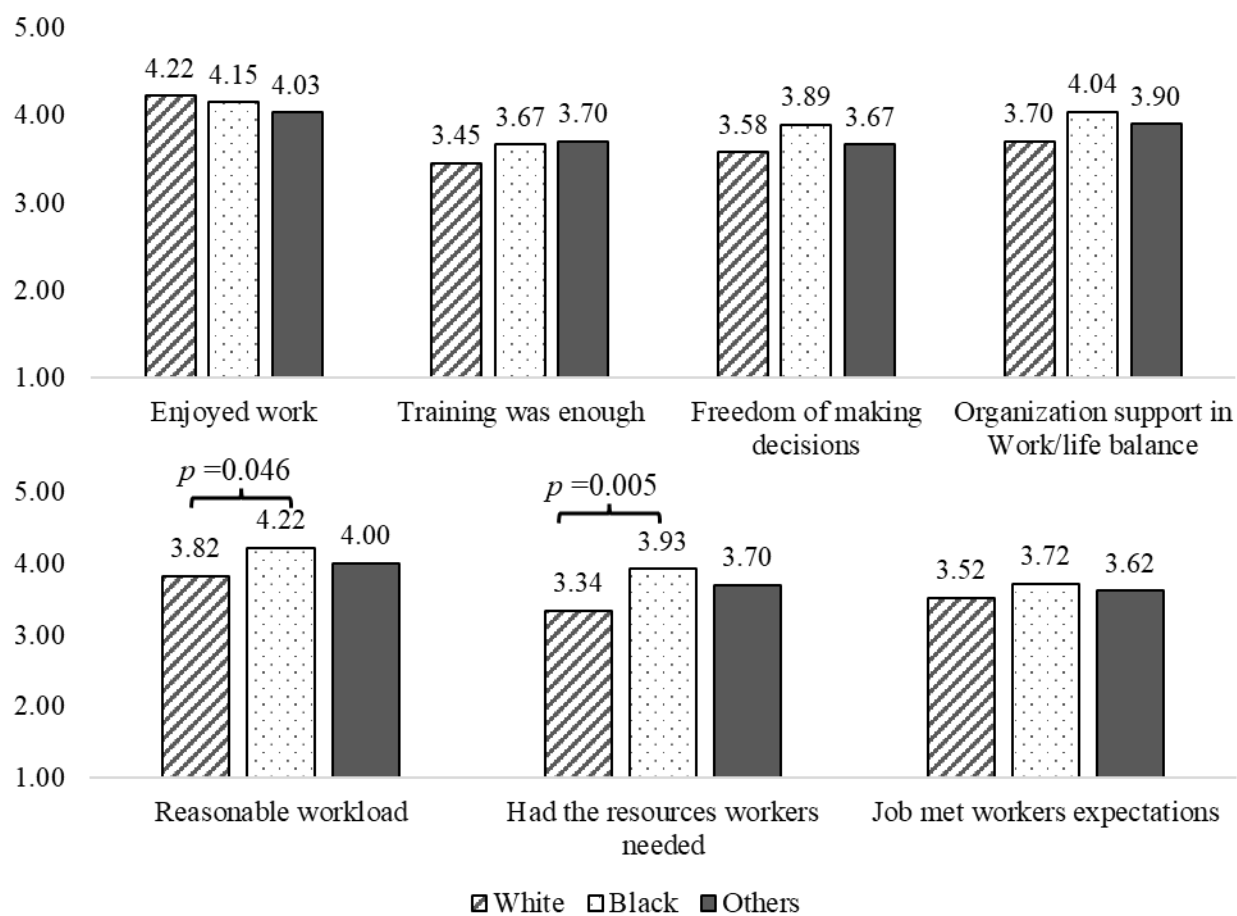


Figure C.4 Job Satisfaction by Ethnicity.

Table C.1 Perceived Job Satisfaction by Education.

Education Group	Key Aspects						
	Enjoyed work	Training was enough	Freedom of making decisions	Organization support in work/life balance	Reasonable workload	Had the resources workers needed	Job met workers expectations
Not Indicated	4.3	3.9	3.9	3.8	3.7	3.7	3.7
High School or Less	4.3	3.6	3.5	3.6	3.9	3.3	3.6
Some College	4.1	3.1	3.5	3.9	3.9	3.3	3.3
Technical School	4.2	3.2	3.4	3.4	3.8	3.1	3.1
Associate Degree	4.2	3.3	3.8	3.7	3.9	3.4	3.5
Bachelor's Degree	4.2	3.6	3.6	3.9	3.8	3.5	3.7
More than Bachelor's Degree	4.0	3.5	3.9	4.0	3.9	3.9	3.5

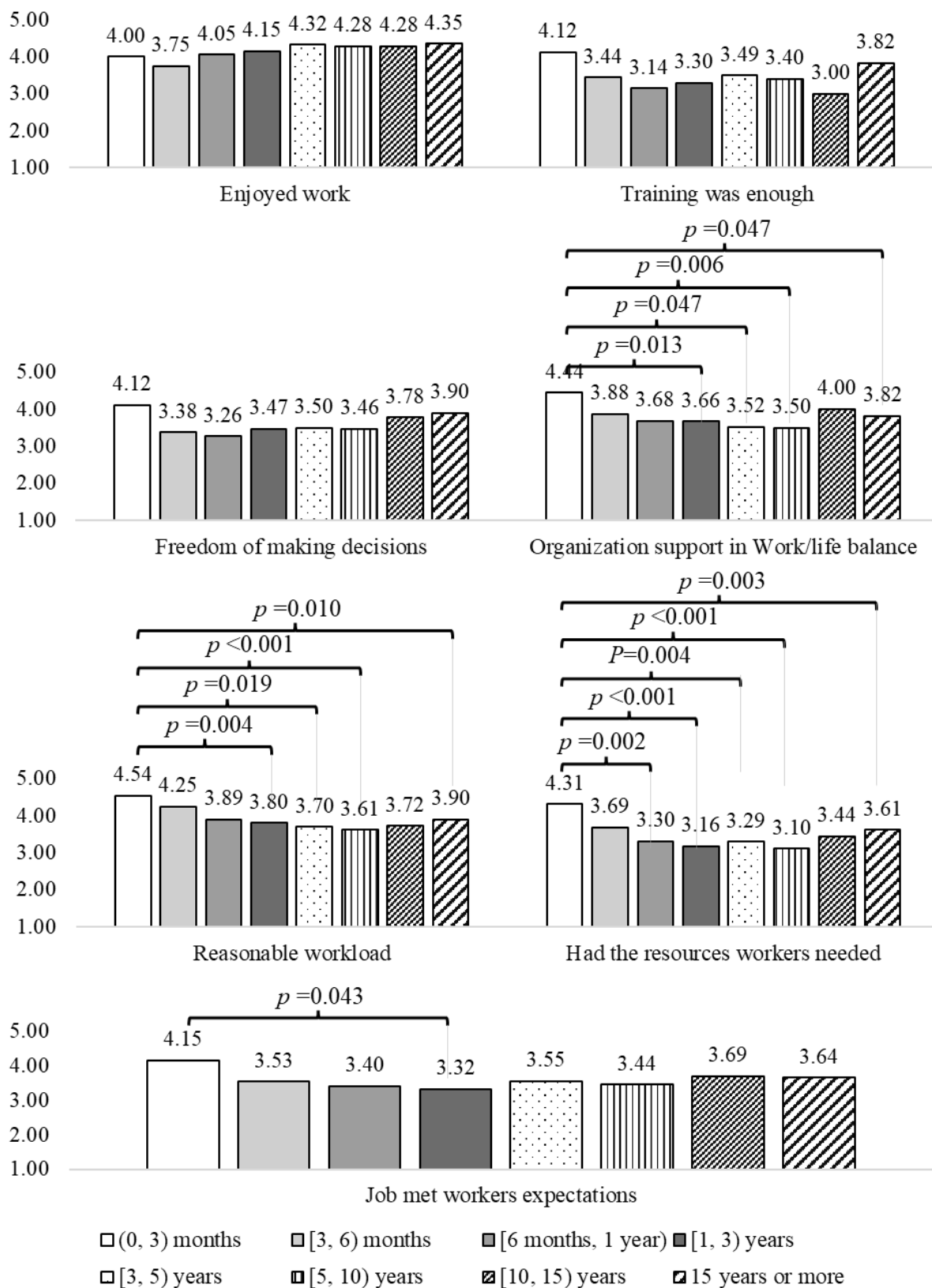


Figure C.5 Job Satisfaction by Tenure.

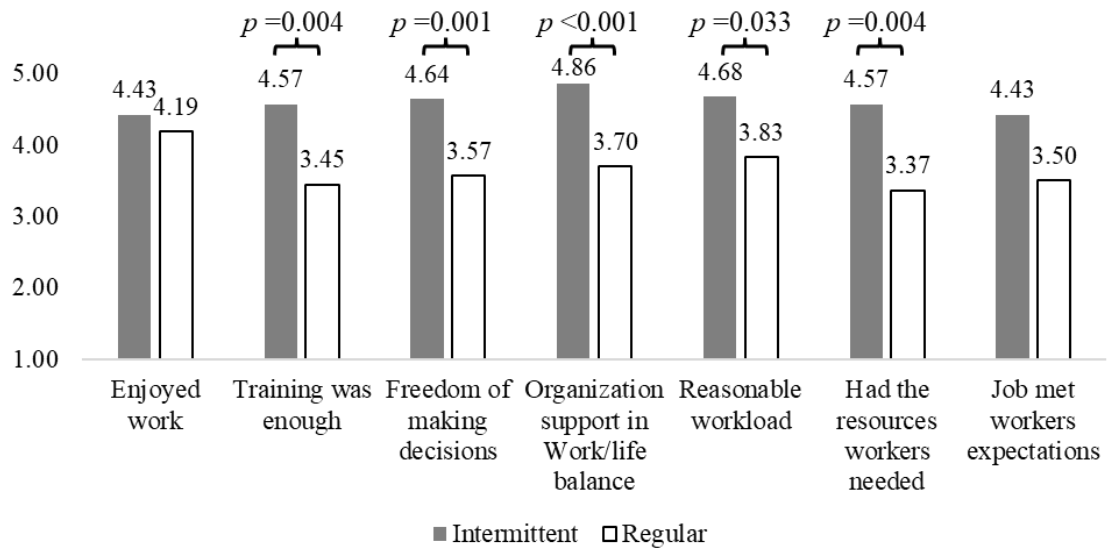


Figure C.6 Job Satisfaction by Employment Type.

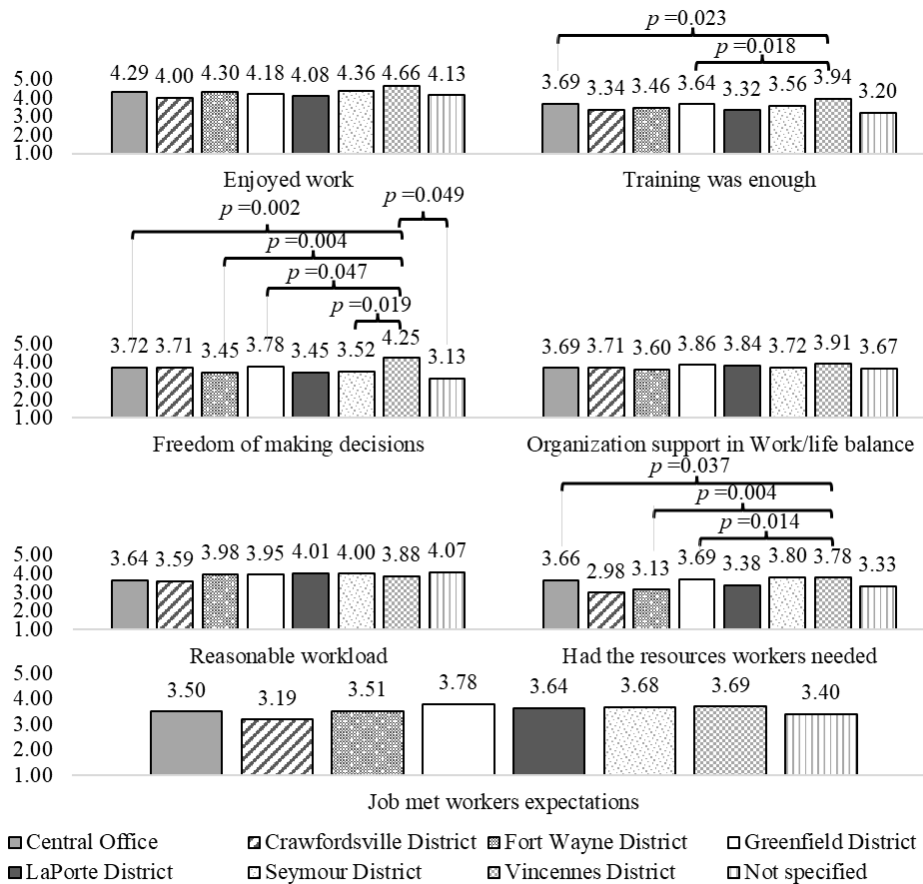


Figure C.7 Job Satisfaction by Location.

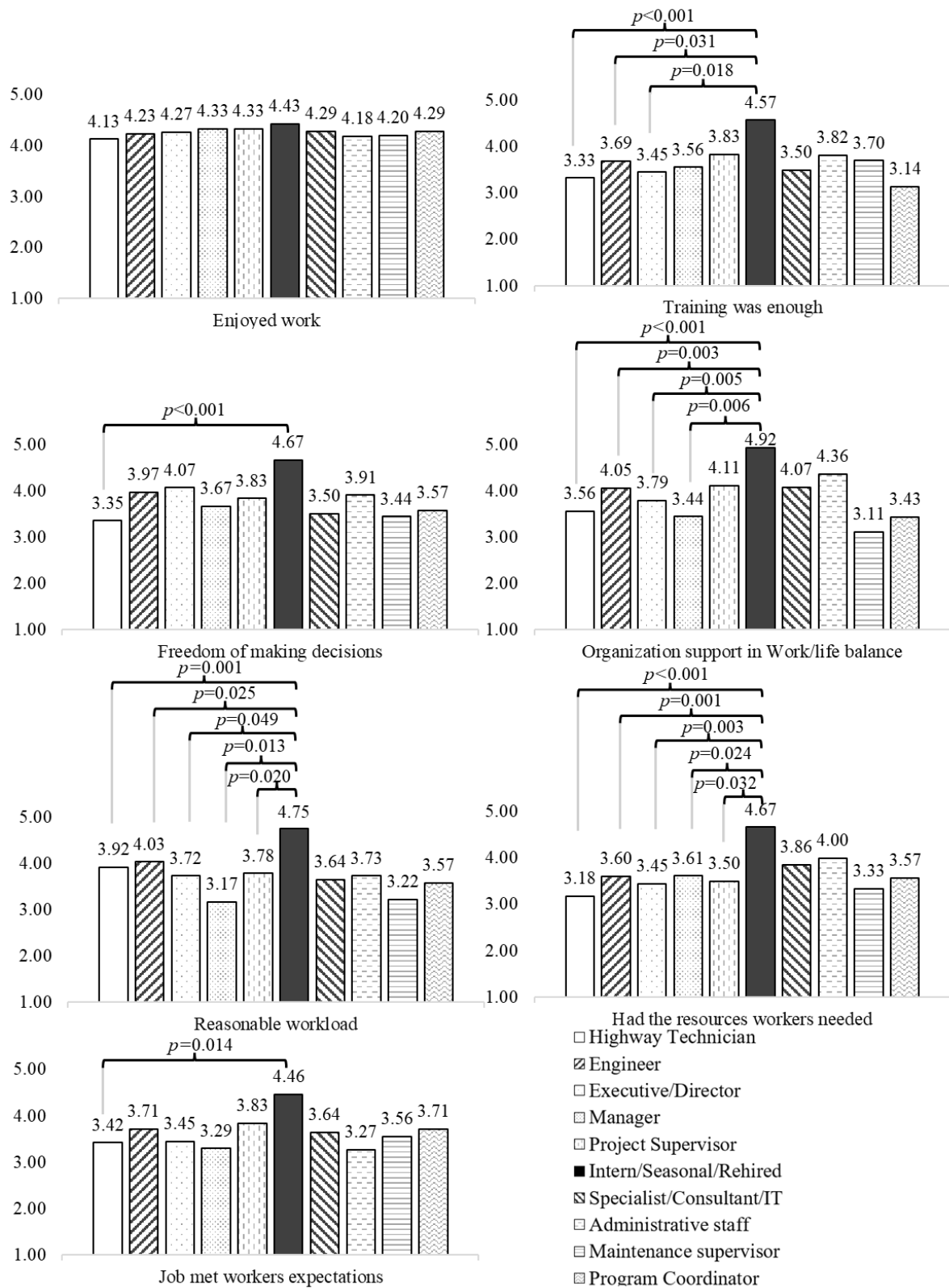


Figure C.8 Job Satisfaction by Job Roles.

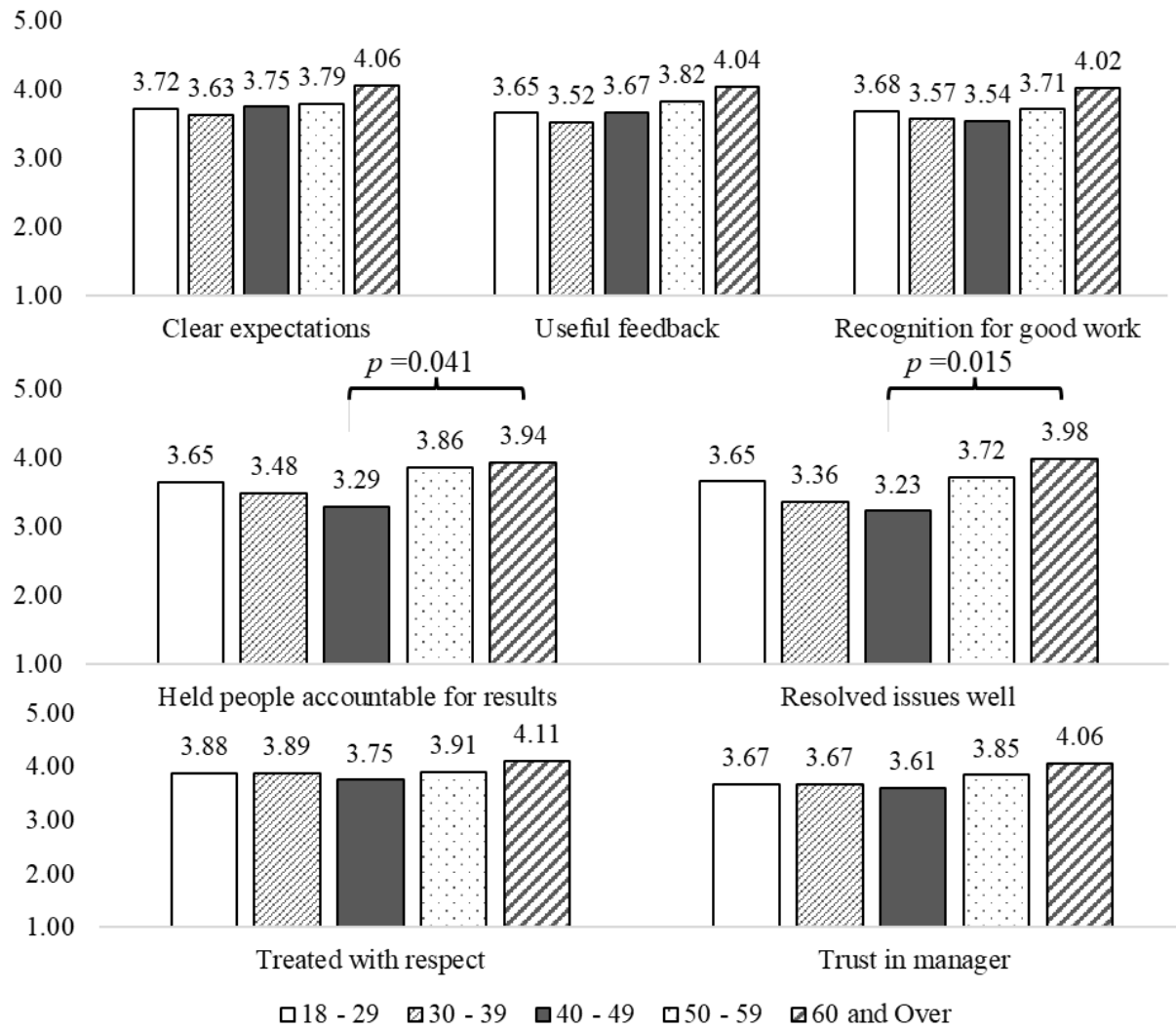


Figure C.9 Manager Factors by Age.

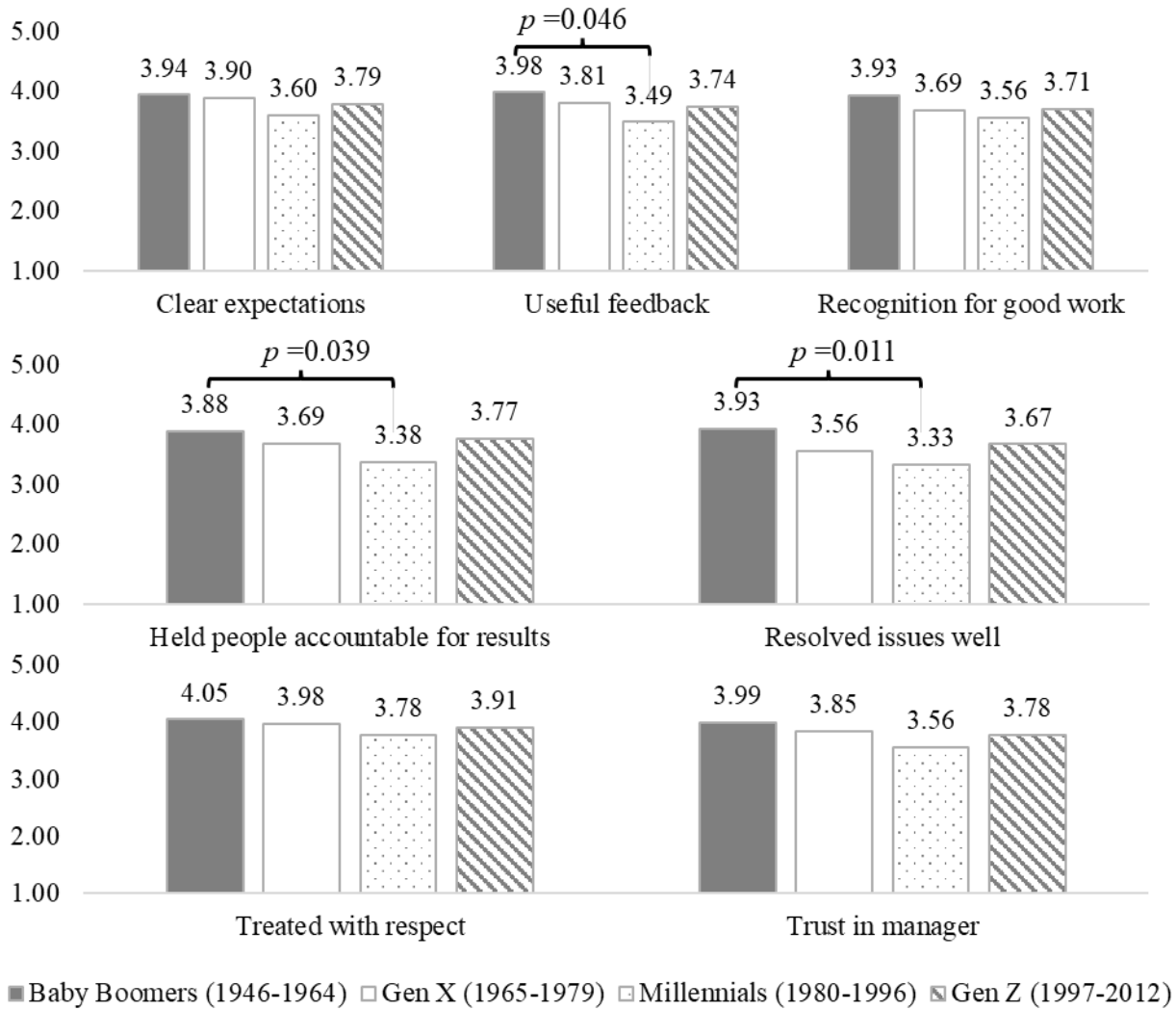


Figure C.10 Manager Factors by Generation.

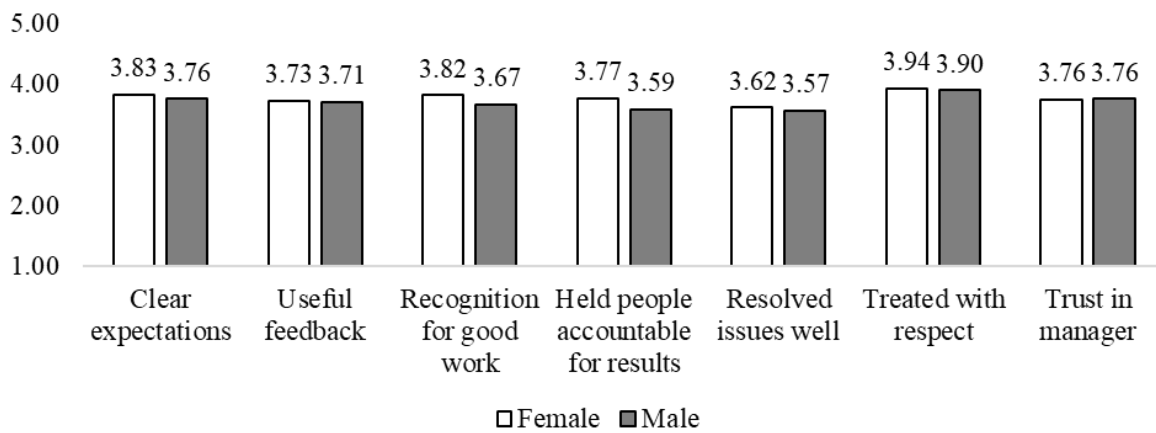


Figure C.11 Manager Factors by Gender.

Table C.2. Manager factors by education

Education Group	Key Aspects						
	Clear expectations	Useful feedback	Recognition for good work	Held people accountable for results	Resolved issues well	Treated with respect	Trust in manager
Not Indicated	3.6	3.6	3.7	3.5	3.5	3.9	3.7
High School or Less	3.8	3.7	3.7	3.5	3.4	3.8	3.6
Some College	3.5	3.5	3.6	3.3	3.3	3.7	3.6
Technical School	3.8	3.7	3.6	3.7	3.7	4.0	3.8
Associate Degree	4.0	3.9	4.0	4.0	3.9	4.0	3.8
Bachelor's Degree	3.9	3.8	3.8	4.0	3.8	4.0	3.9
More than Bachelor's Degree	4.0	4.0	3.8	3.9	3.9	4.3	4.3

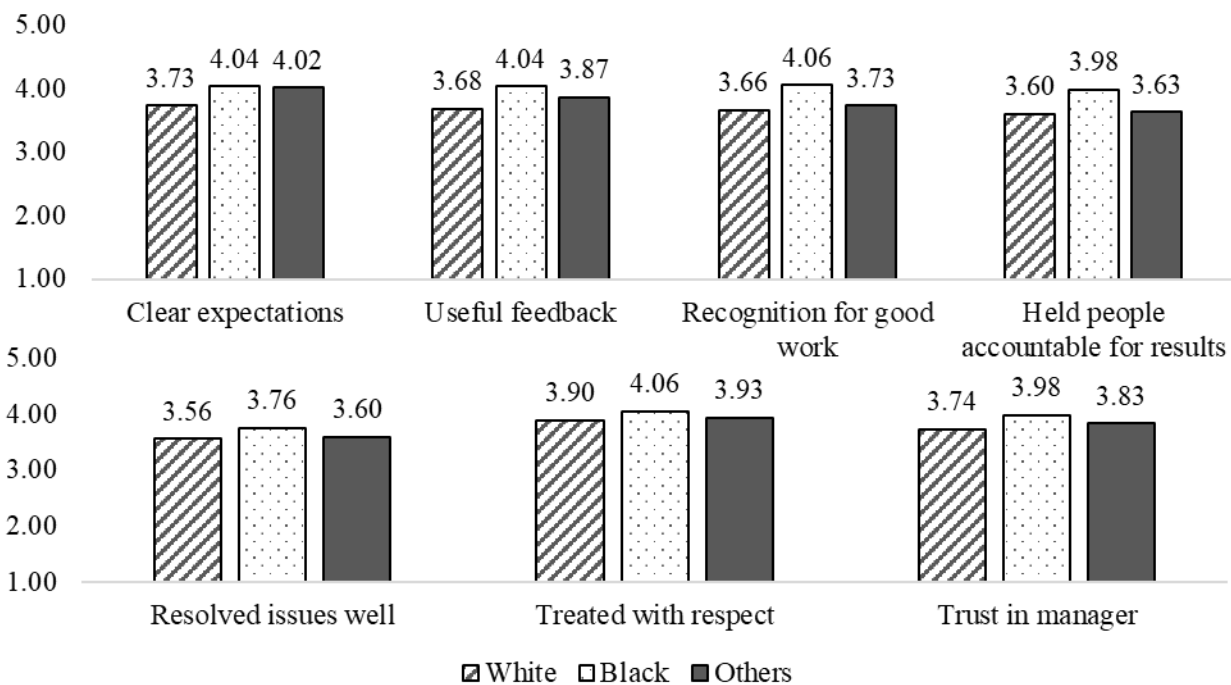


Figure C.12 Manager Factors by Ethnicity.

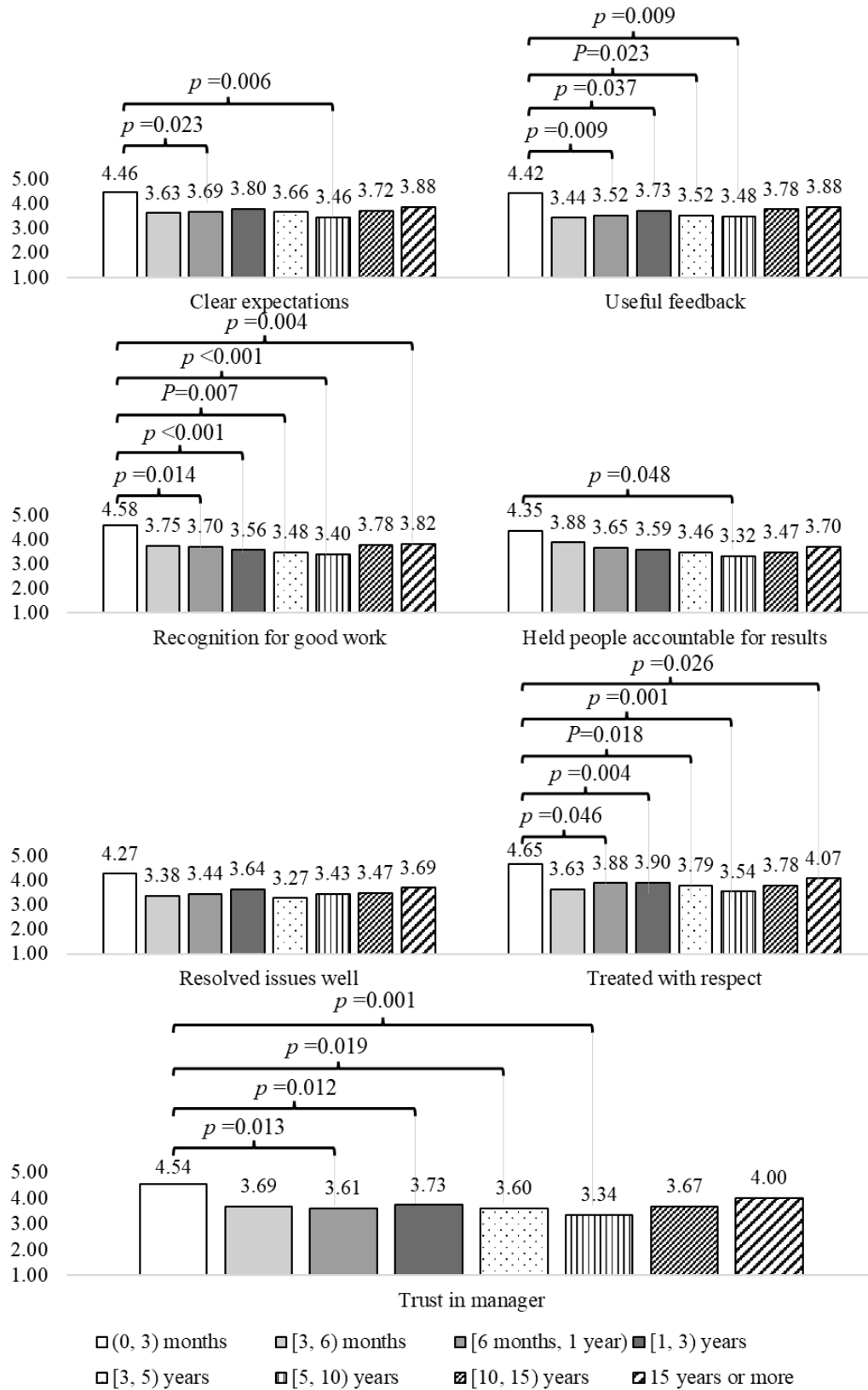


Figure C.13 Manager Factors by Tenure.

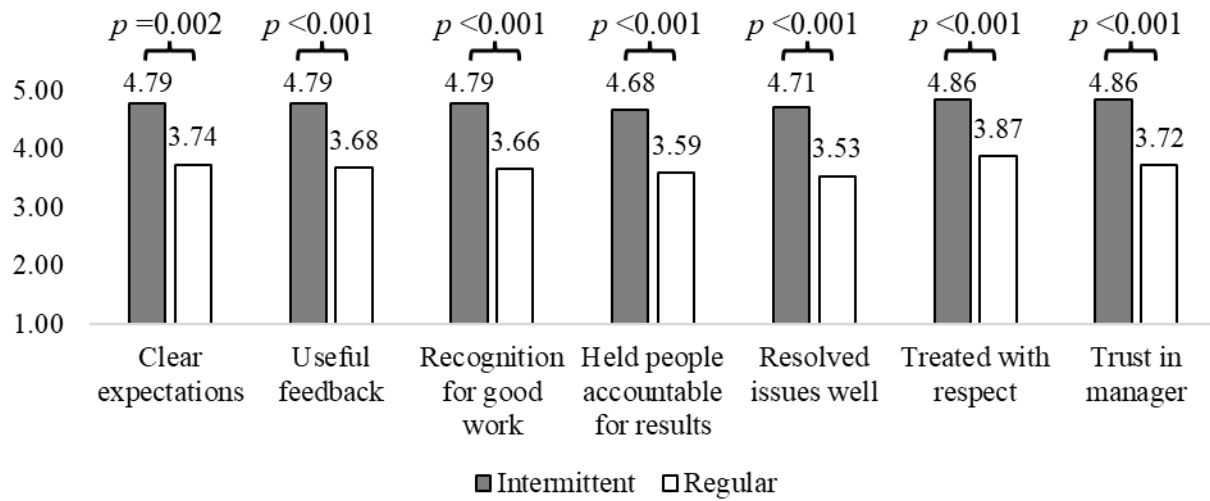


Figure C.14 Manager Factors by Employment Type.

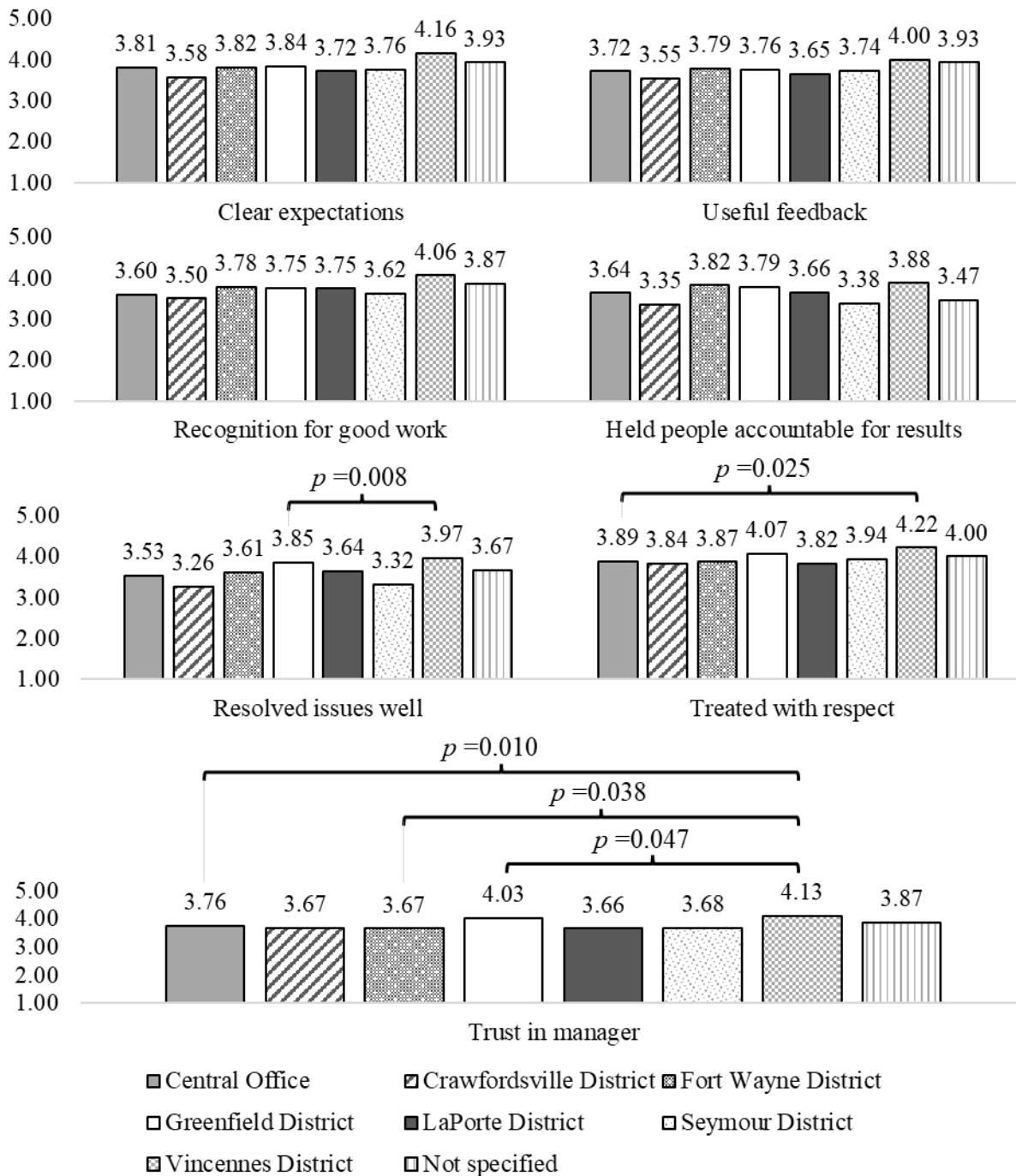


Figure C.15 Manager Factors by Location.

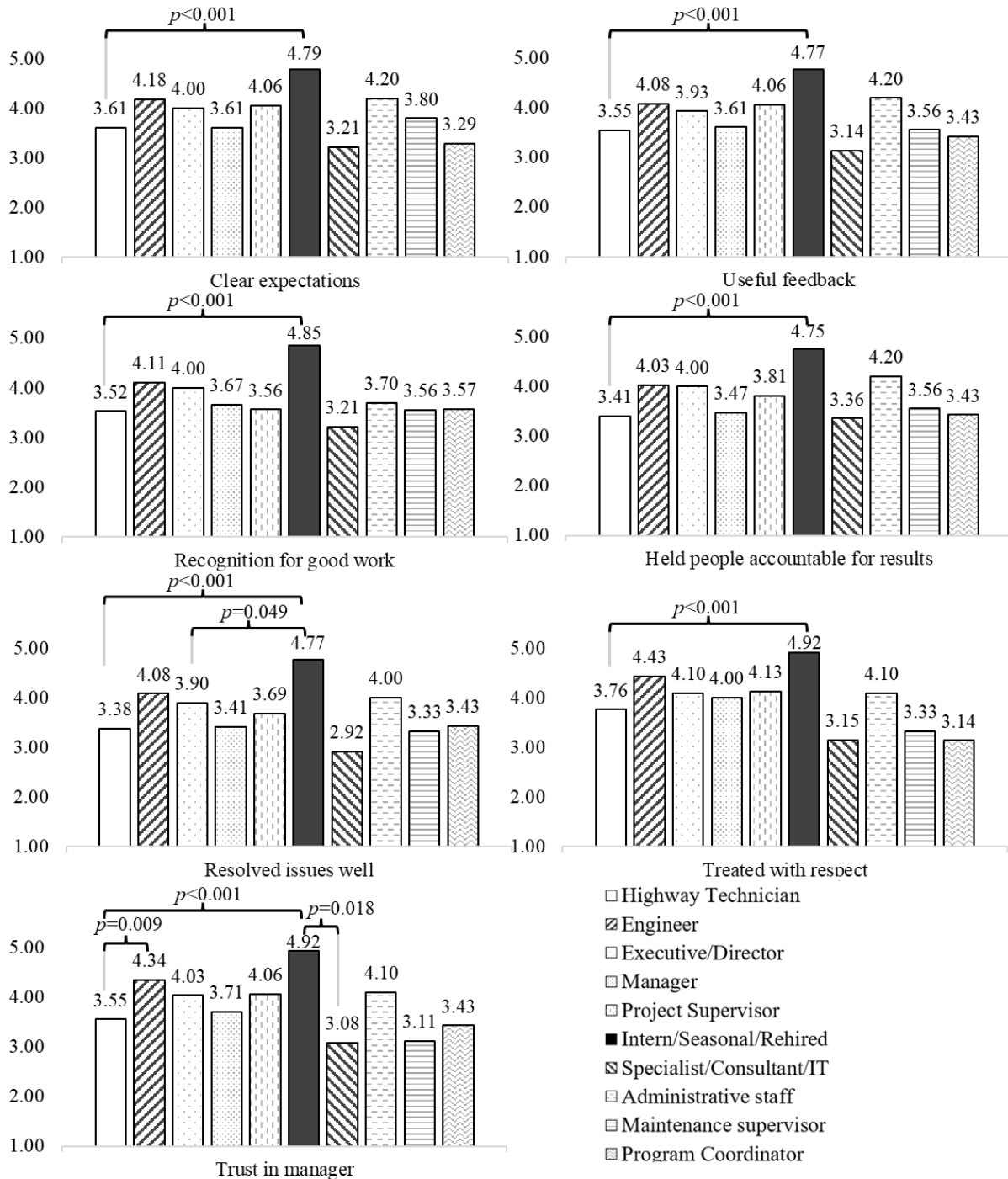


Figure C.16 Manager Factors by Job Roles.

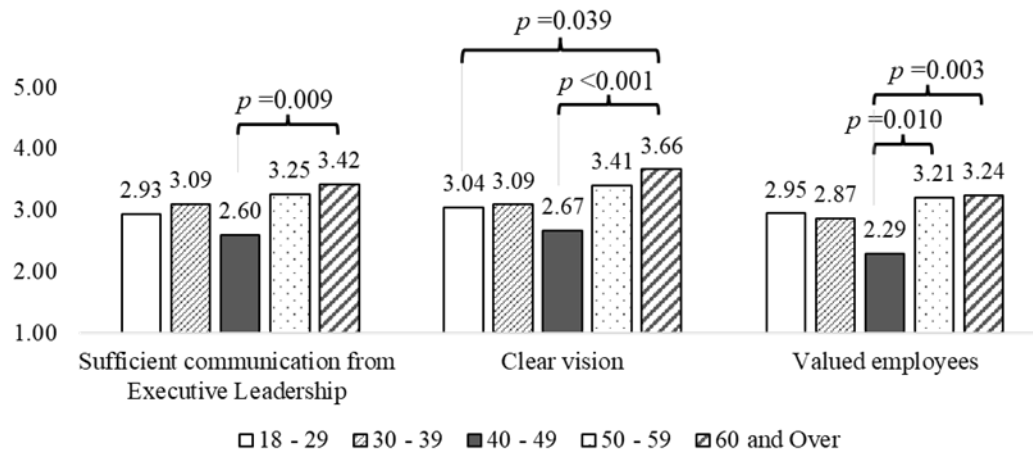


Figure C.17 Senior Leadership by Age.

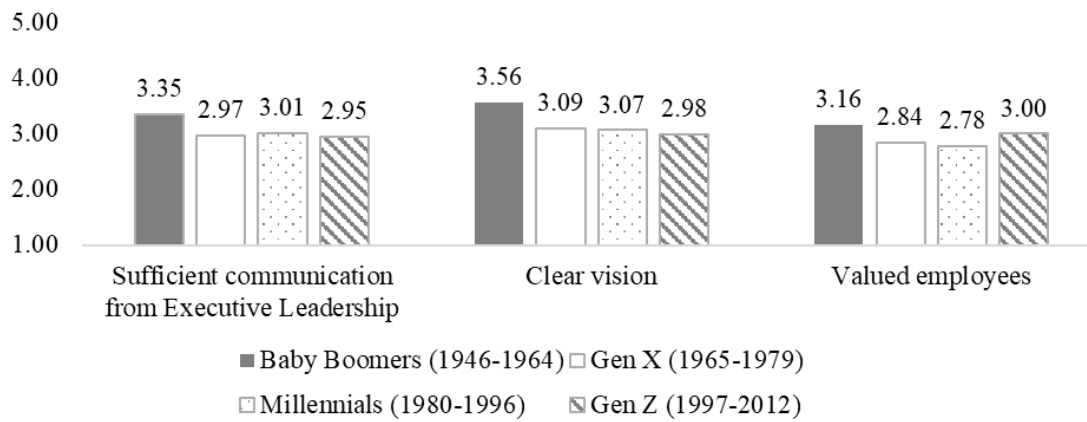


Figure C.18 Senior Leadership by Generation.

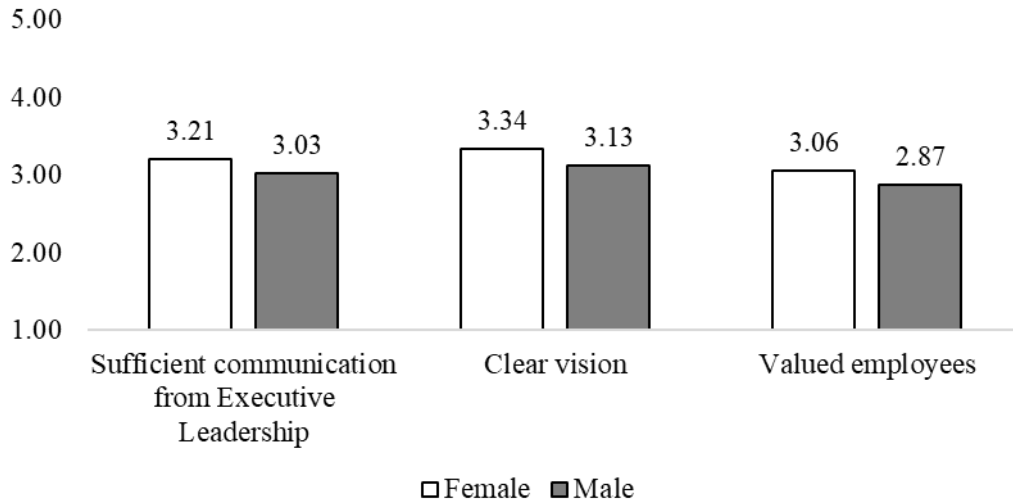


Figure C.19 Senior Leadership by Gender.

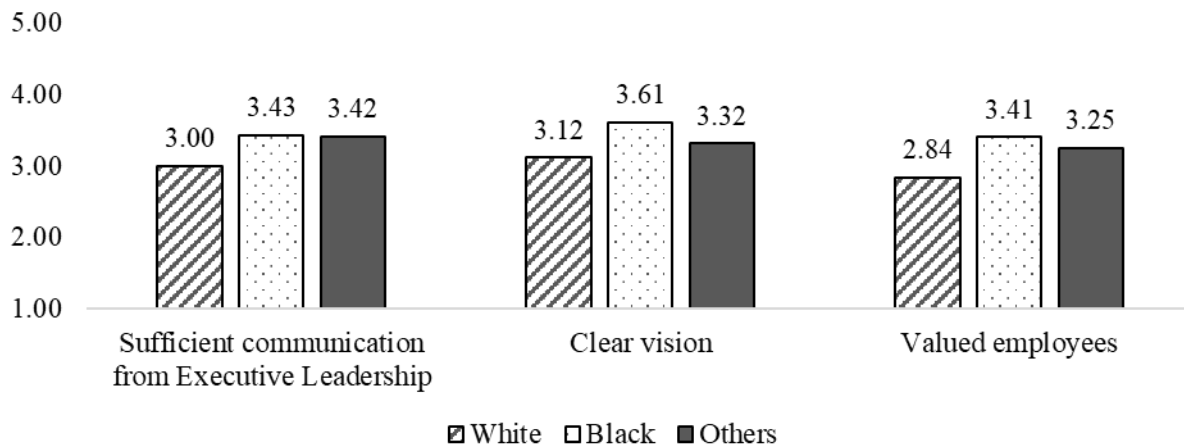


Figure C.20 Senior Leadership by Ethnicity.

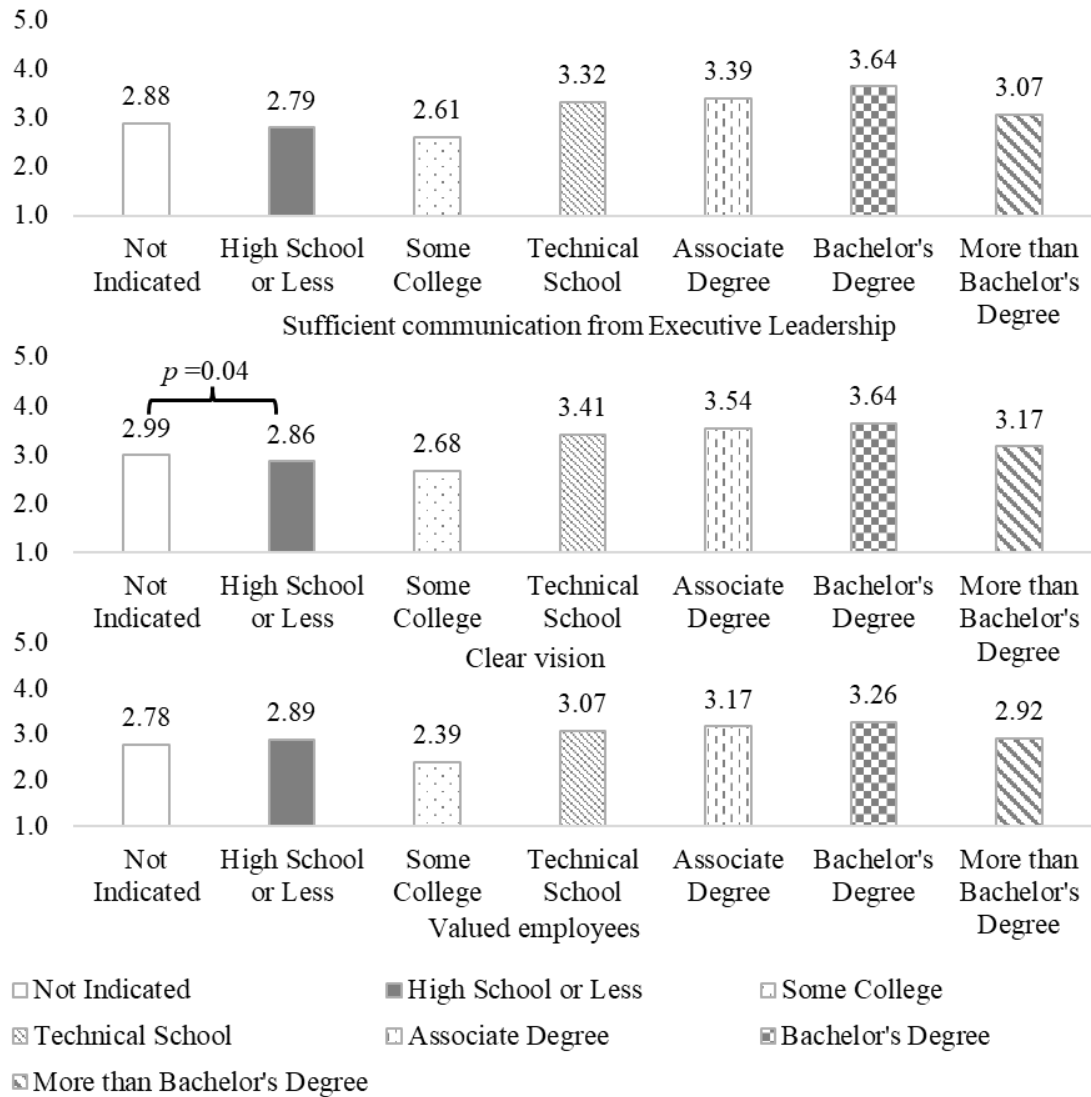


Figure C.21 Senior Leadership by Education.

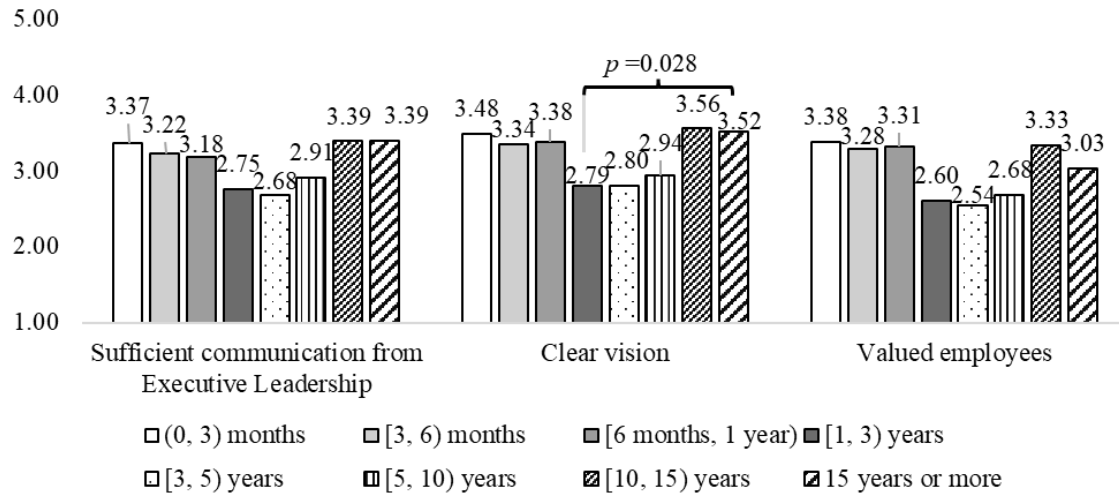


Figure C.22 Senior Leadership by Tenure.

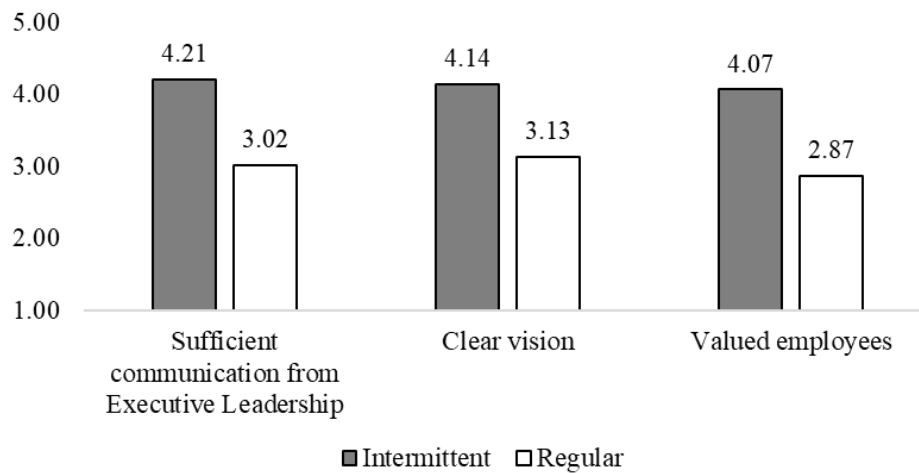


Figure C.23 Senior Leadership by Employment Type.

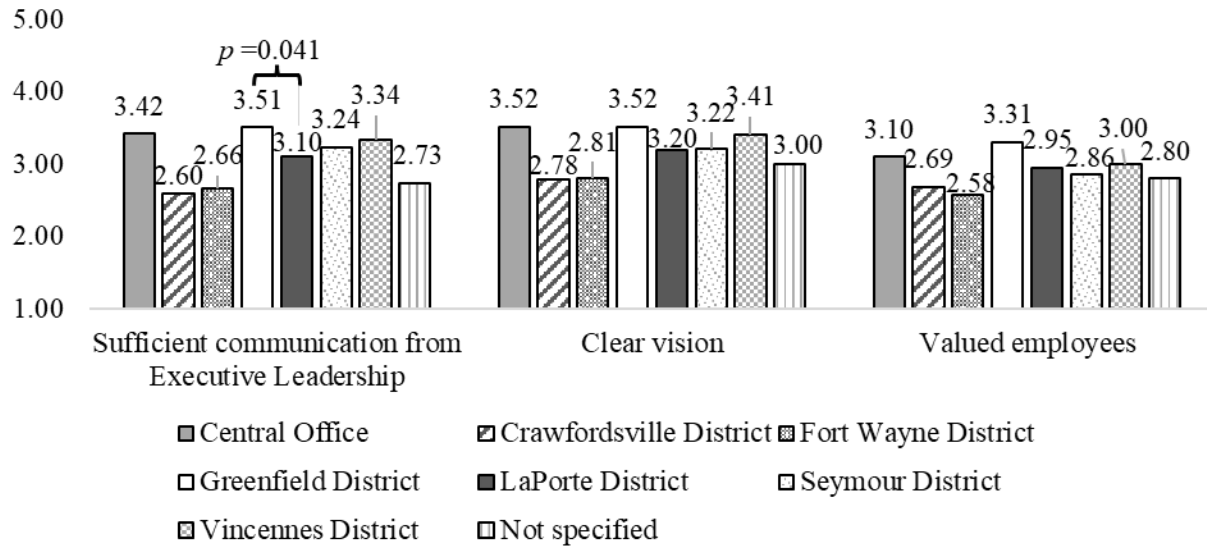


Figure C.24 Senior Leadership by Location.

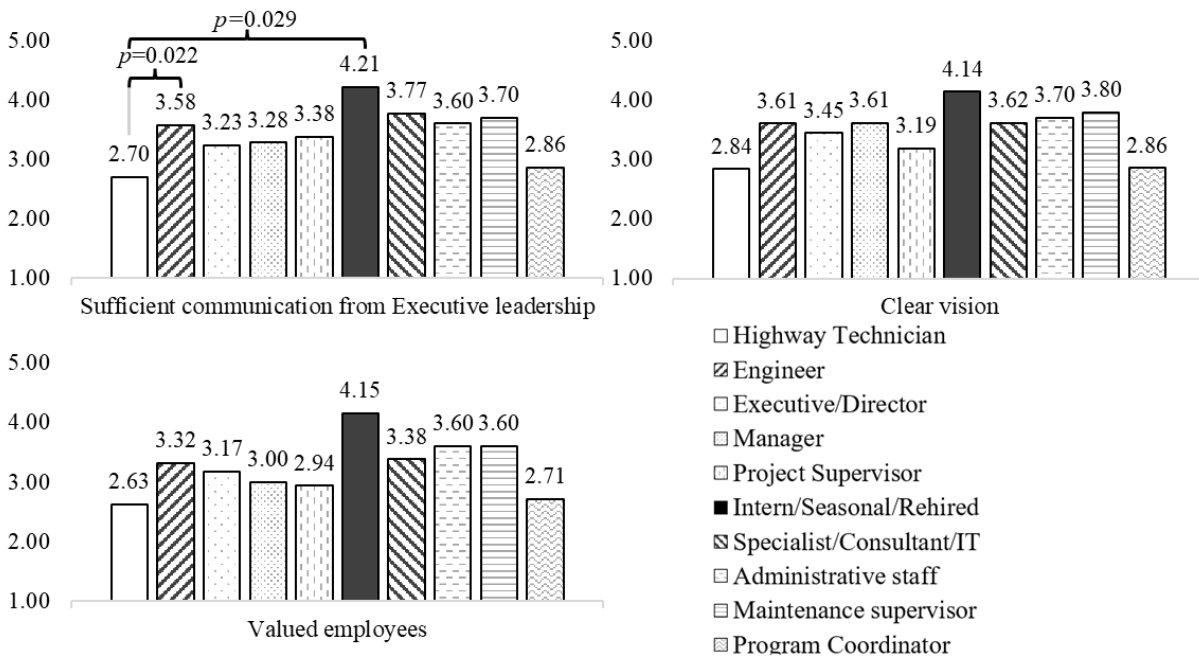


Figure C.25 Senior Leadership by Job Roles.

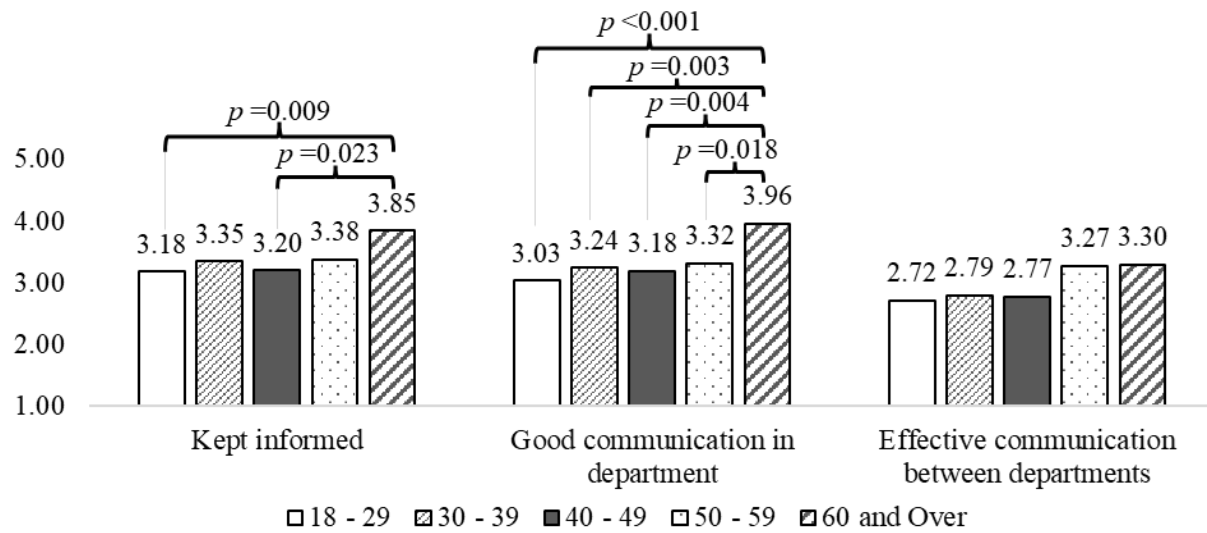


Figure C.26 Communication by Age.

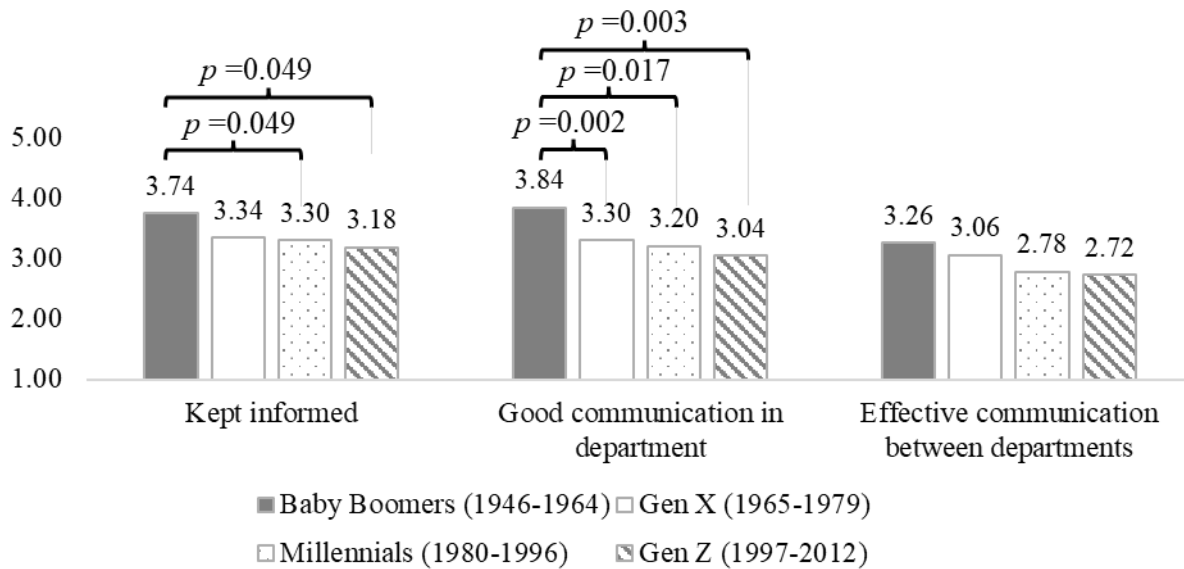


Figure C.27 Communication by Generation.

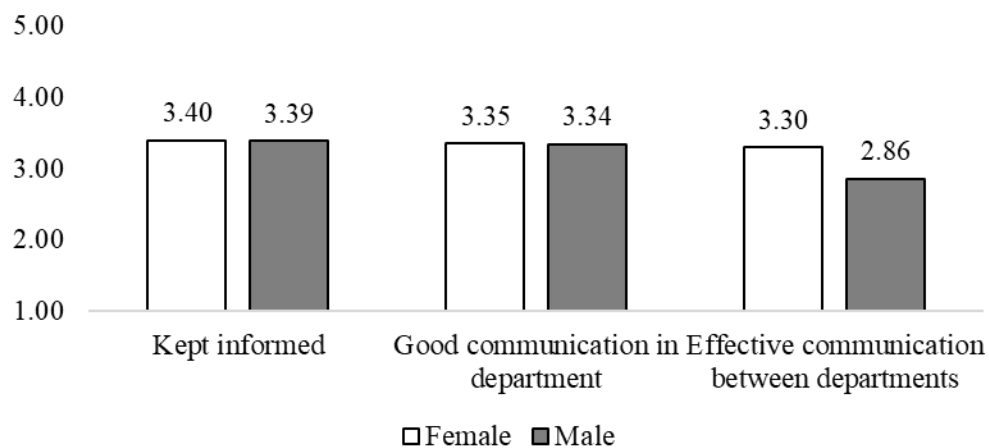


Figure C.28 Communication by Gender.

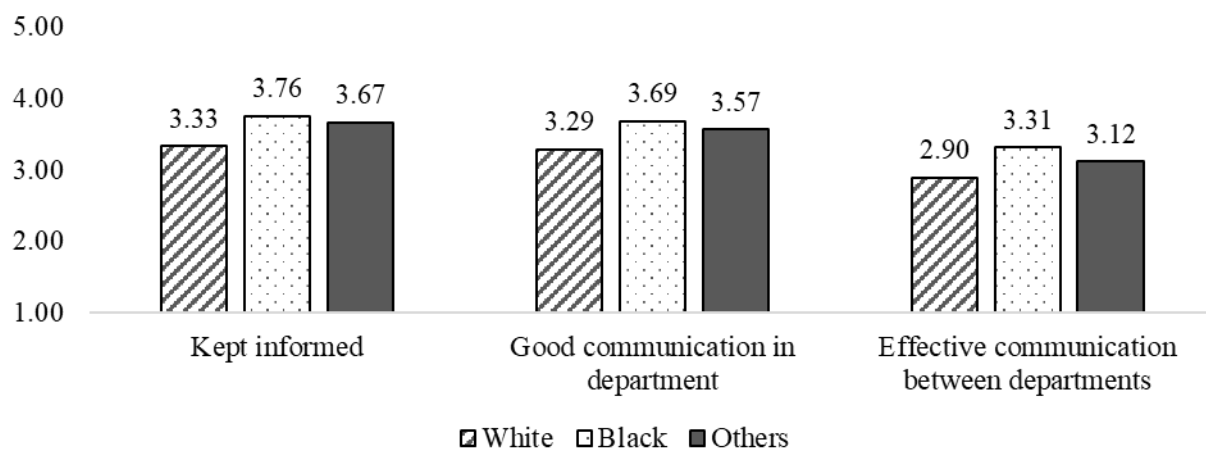


Figure C.29 Communication by Ethnicity.

Table C.3 Communication by Education.

Education Group	Key Aspects		
	Kept informed	Good communication in department	Effective communication between departments
Not Indicated	3.7	3.8	3.3
High School or Less	3.3	3.2	2.8
Some College	3.3	3.1	2.9
Technical School	3.2	3.0	2.6
Associate Degree	3.5	3.4	3.0
Bachelor's Degree	3.5	3.6	3.2
More than Bachelor's Degree	3.8	3.8	3.4

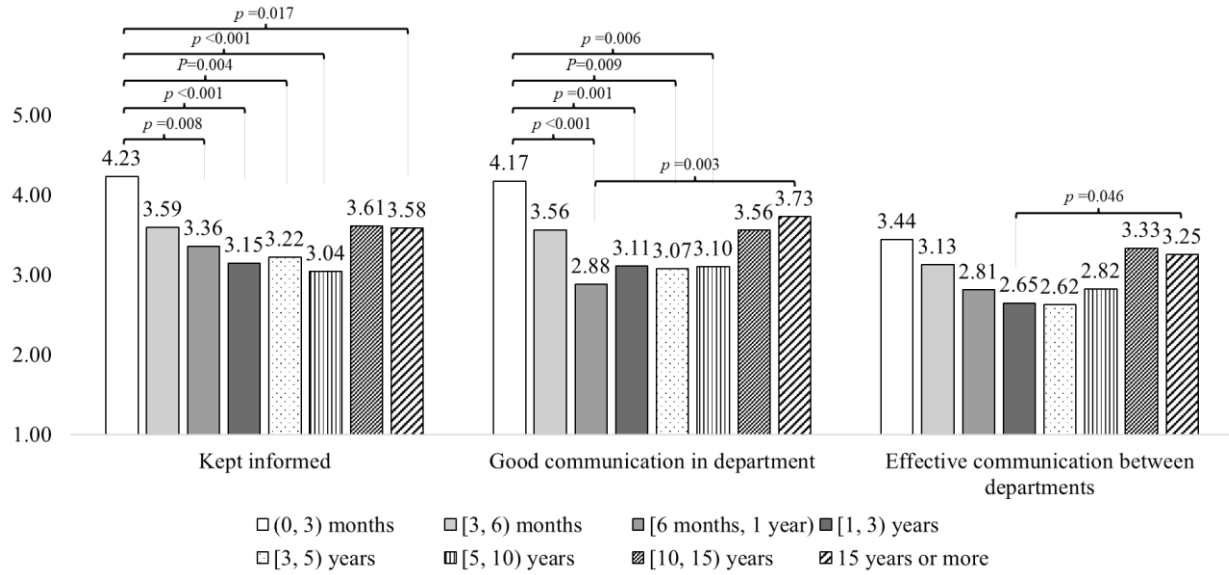


Figure C.30 Communication by Tenure.

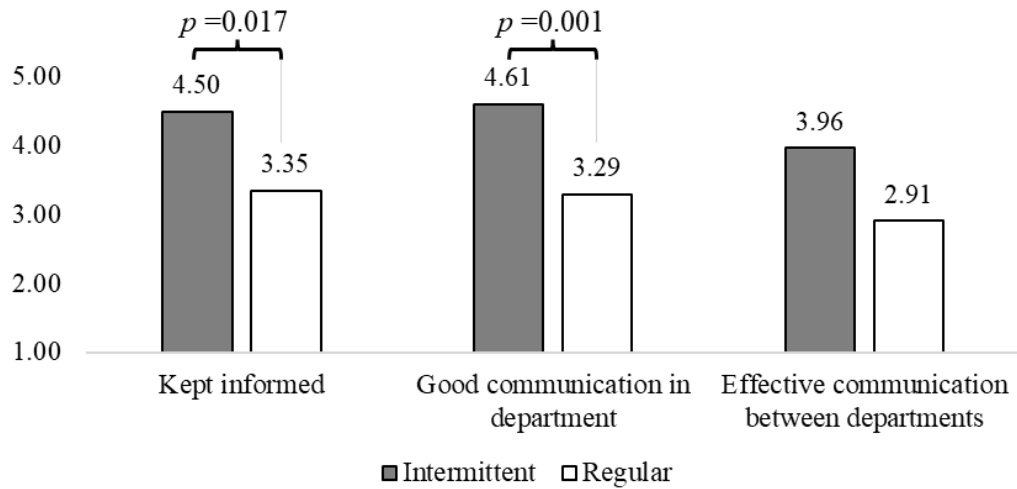


Figure C.31 Communication by Employment Type.

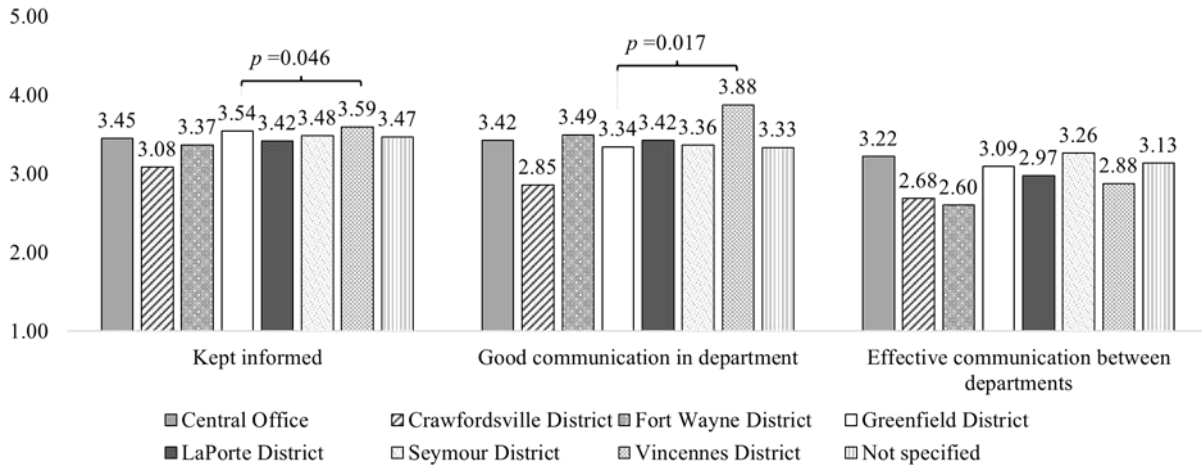


Figure C.32 Communication by Location.

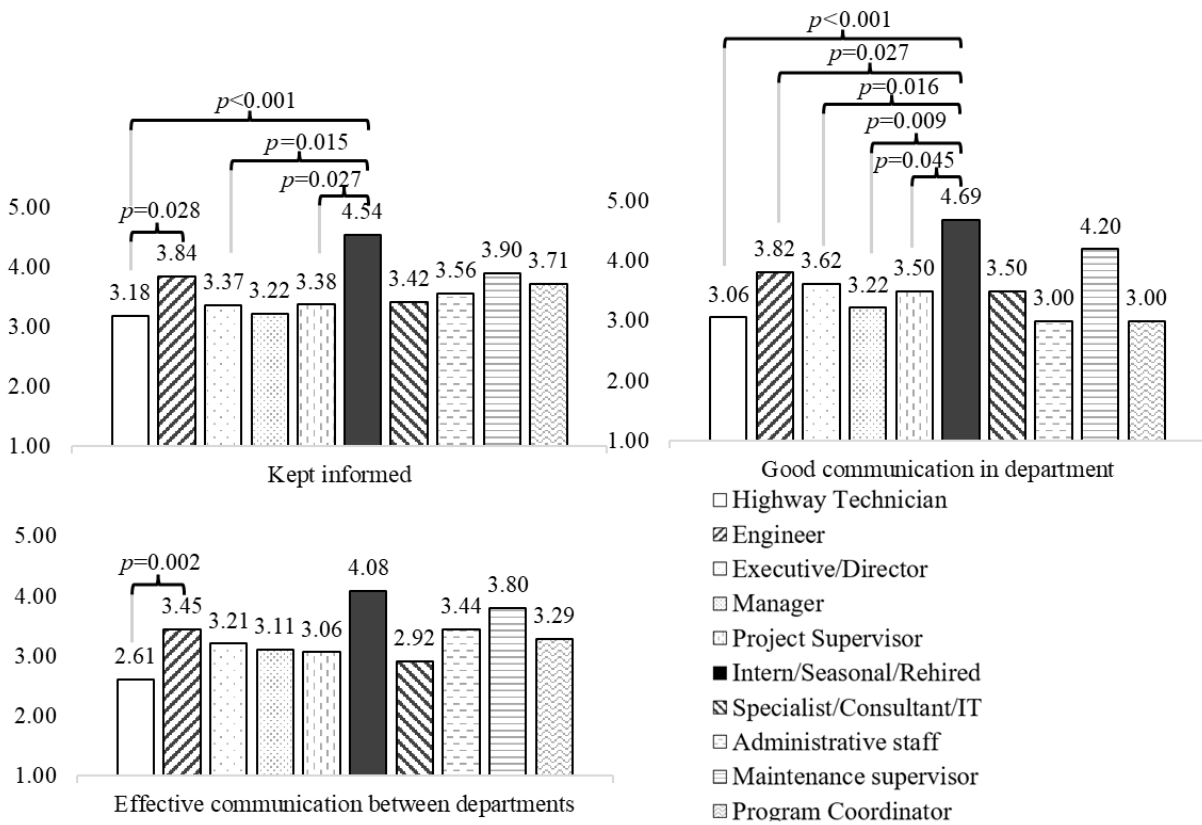


Figure C.33 Communication by Job Roles.

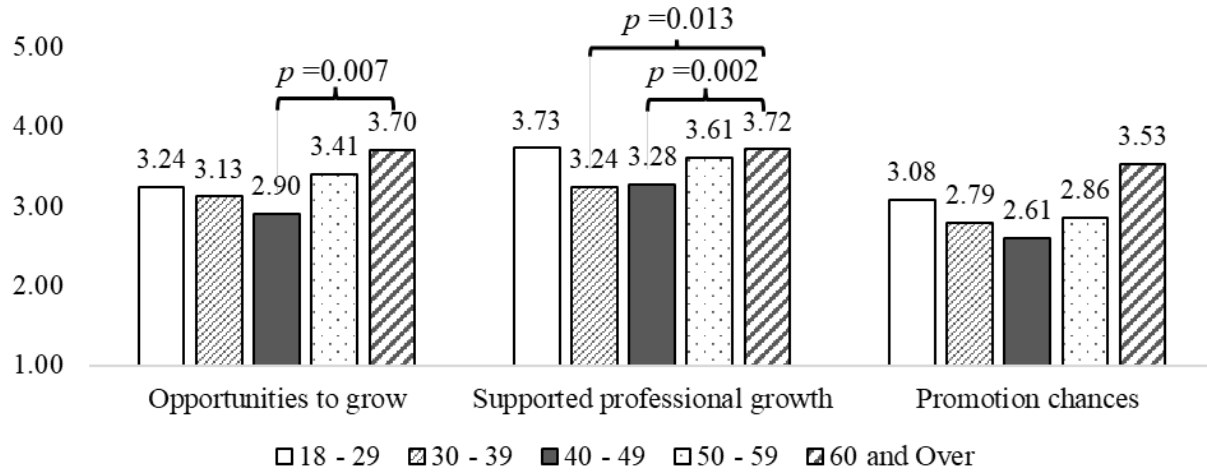


Figure C.34 Growth and Development by Age.

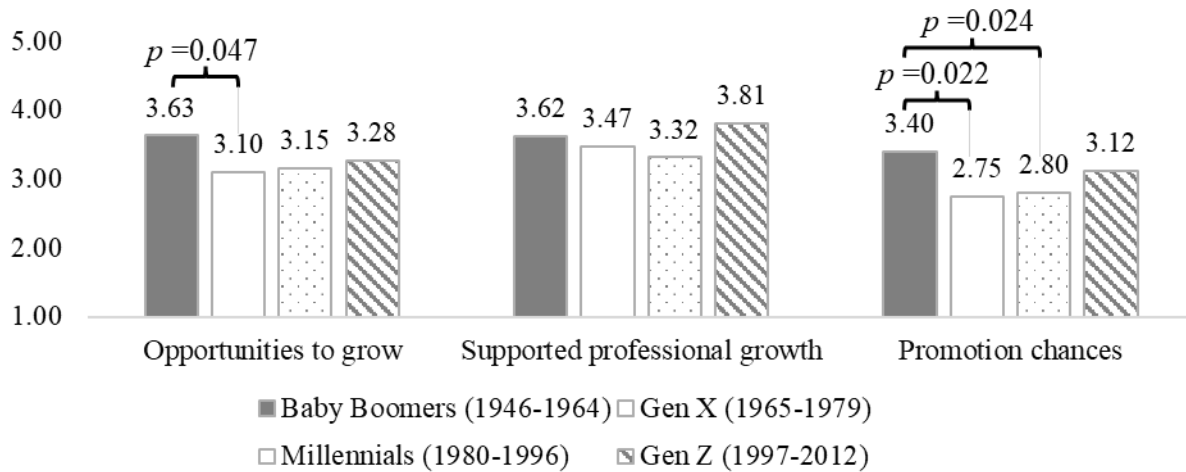


Figure C.35 Growth and Development by Generation.

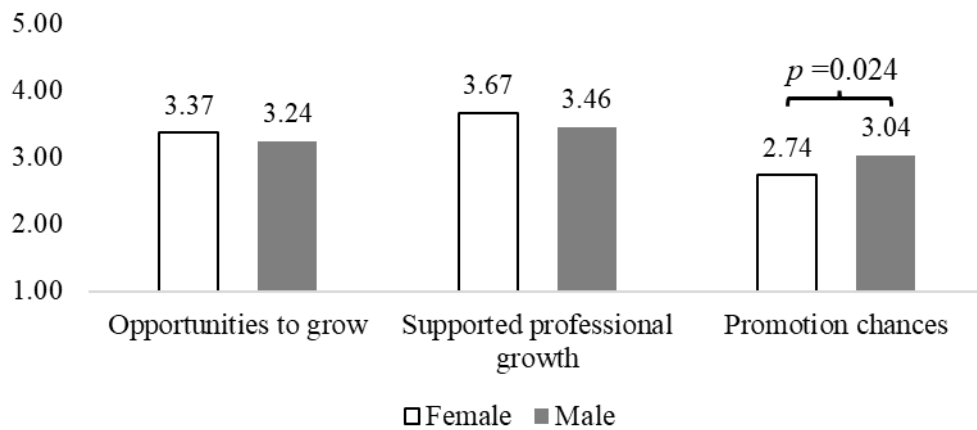


Figure C.36 Growth and Development by Gender.

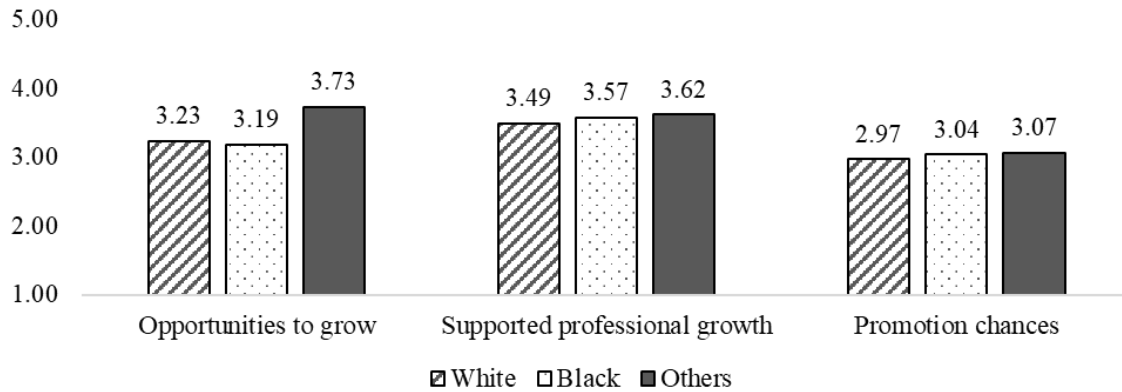


Figure C.37 Growth and Development by Ethnicity.

Table C.4 Growth and Development by Education.

Education Group	Key Aspects		
	Opportunities to grow	Supported professional growth	Promotion chances
Not Indicated	3.7	3.7	3.3
High School or Less	3.1	3.4	3.0
Some College	3.4	3.3	3.0
Technical School	3.0	3.4	2.9
Associate Degree	3.4	3.6	2.9
Bachelor's Degree	3.3	3.7	3.1
More than Bachelor's Degree	3.3	3.6	2.9

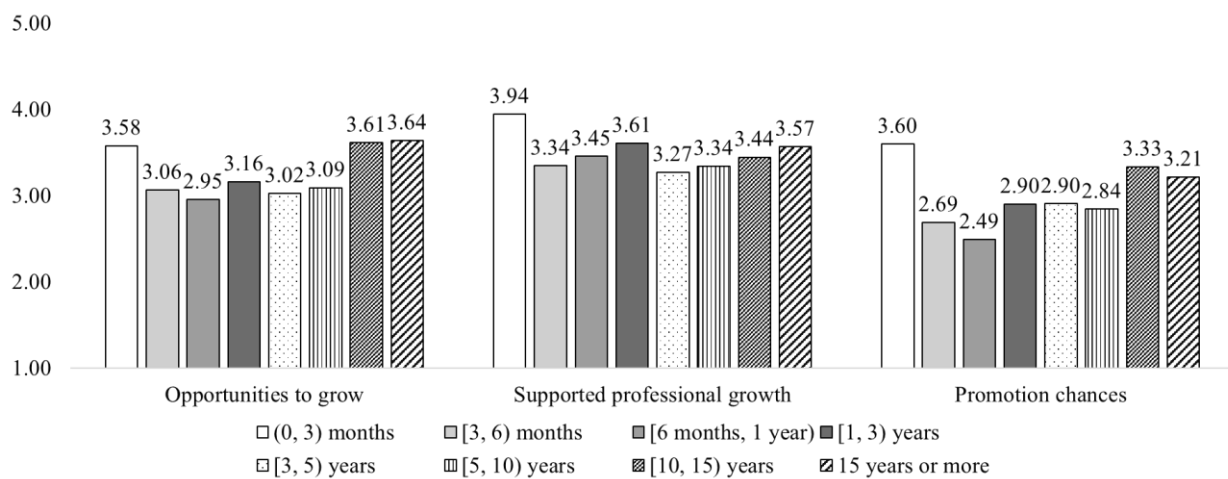


Figure C.38 Growth and Development by Tenure.

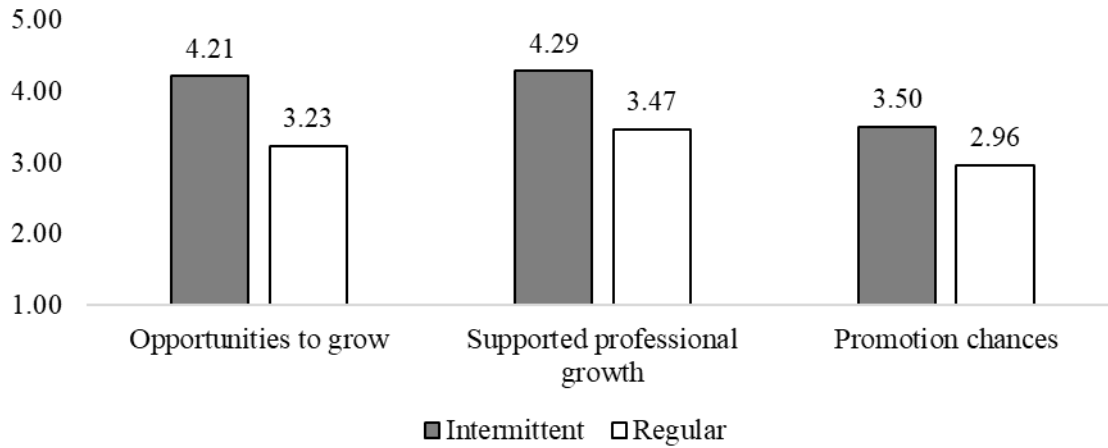


Figure C.39 Growth and Development by Employment Type.

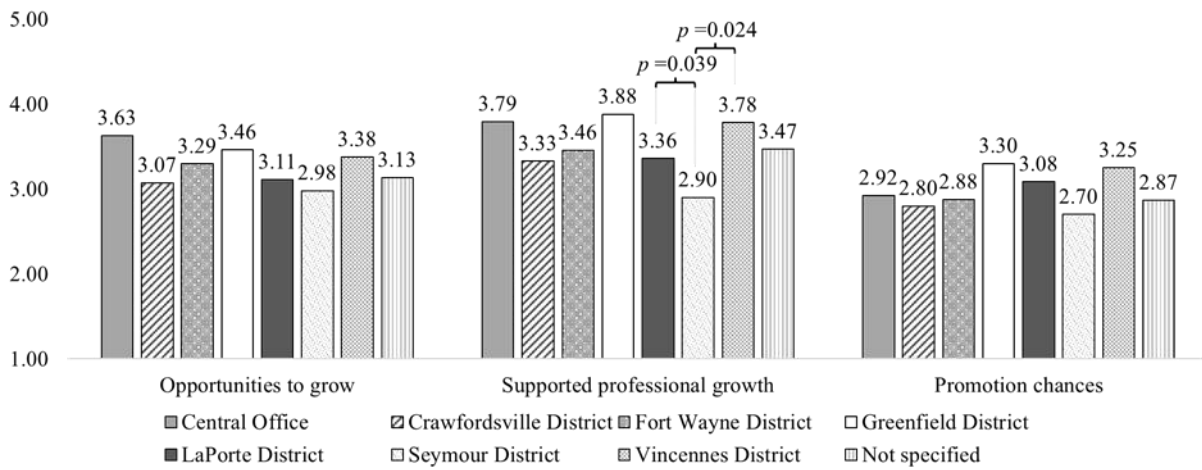


Figure C.40 Growth and Development by Location.

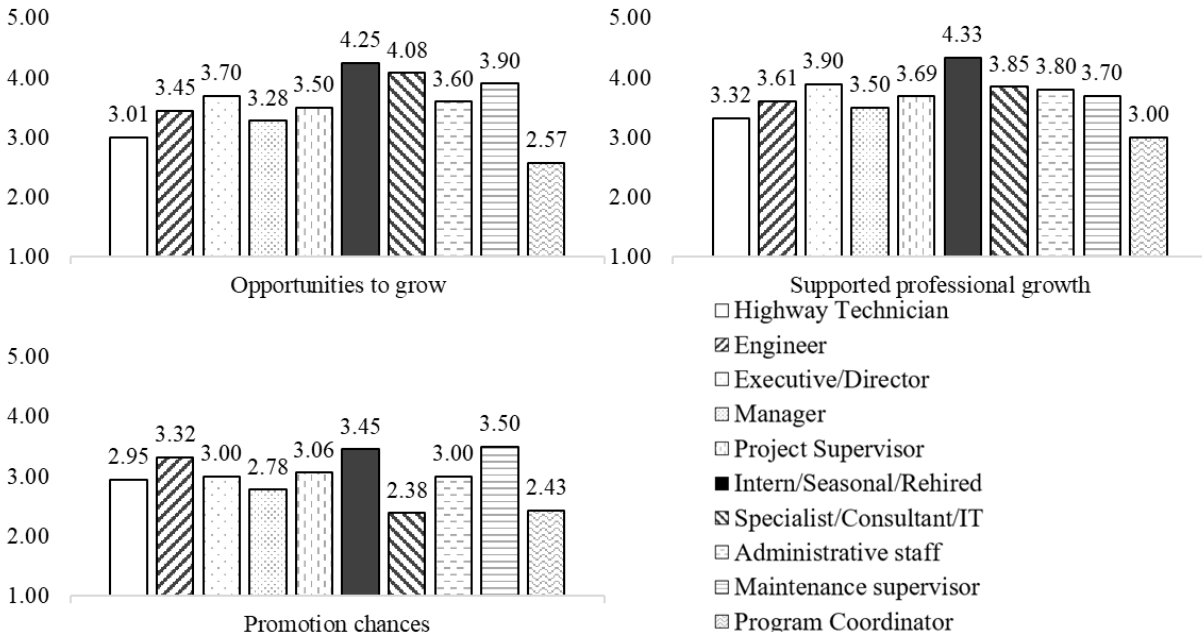


Figure C.41 Growth and Development by Job Roles.

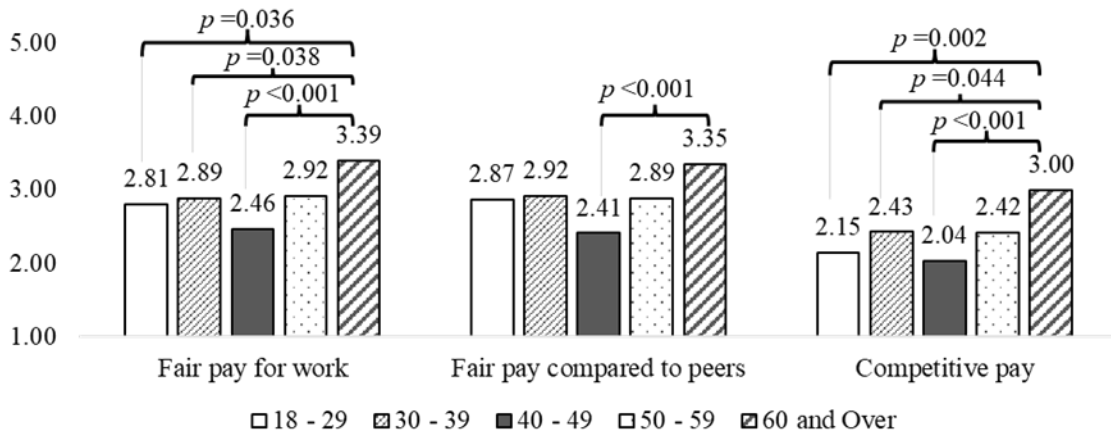


Figure C.42 Compensation by Age.

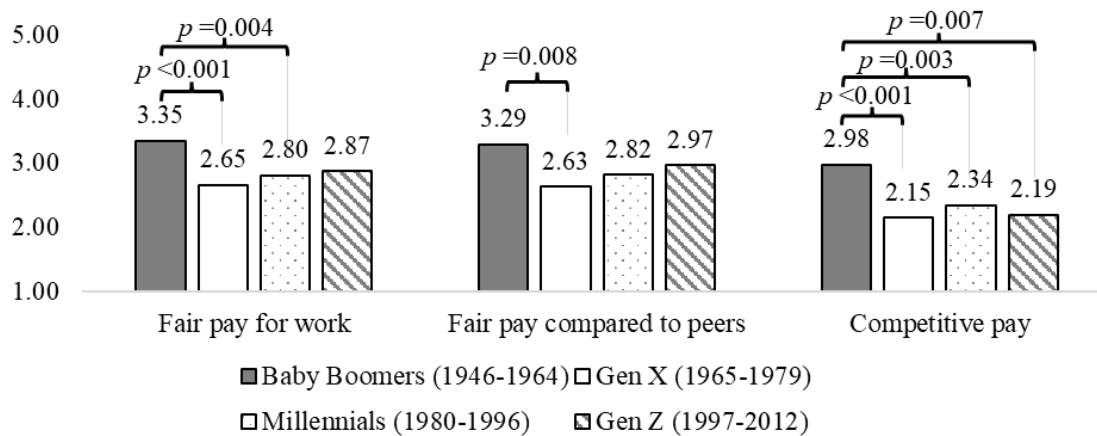


Figure C.43 Compensation by Generation.



Figure C.44 Compensation by Gender.

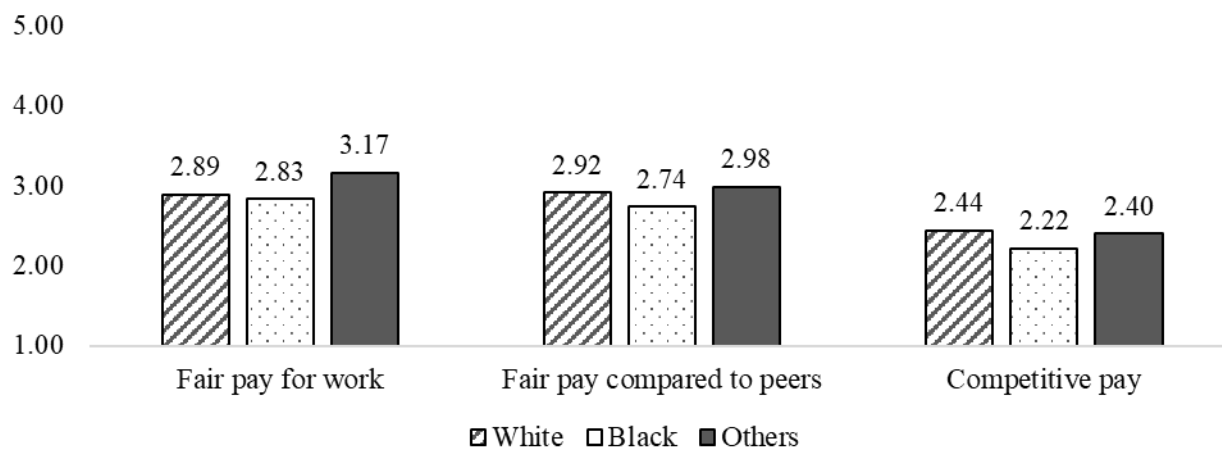


Figure C.45 Compensation by Ethnicity.

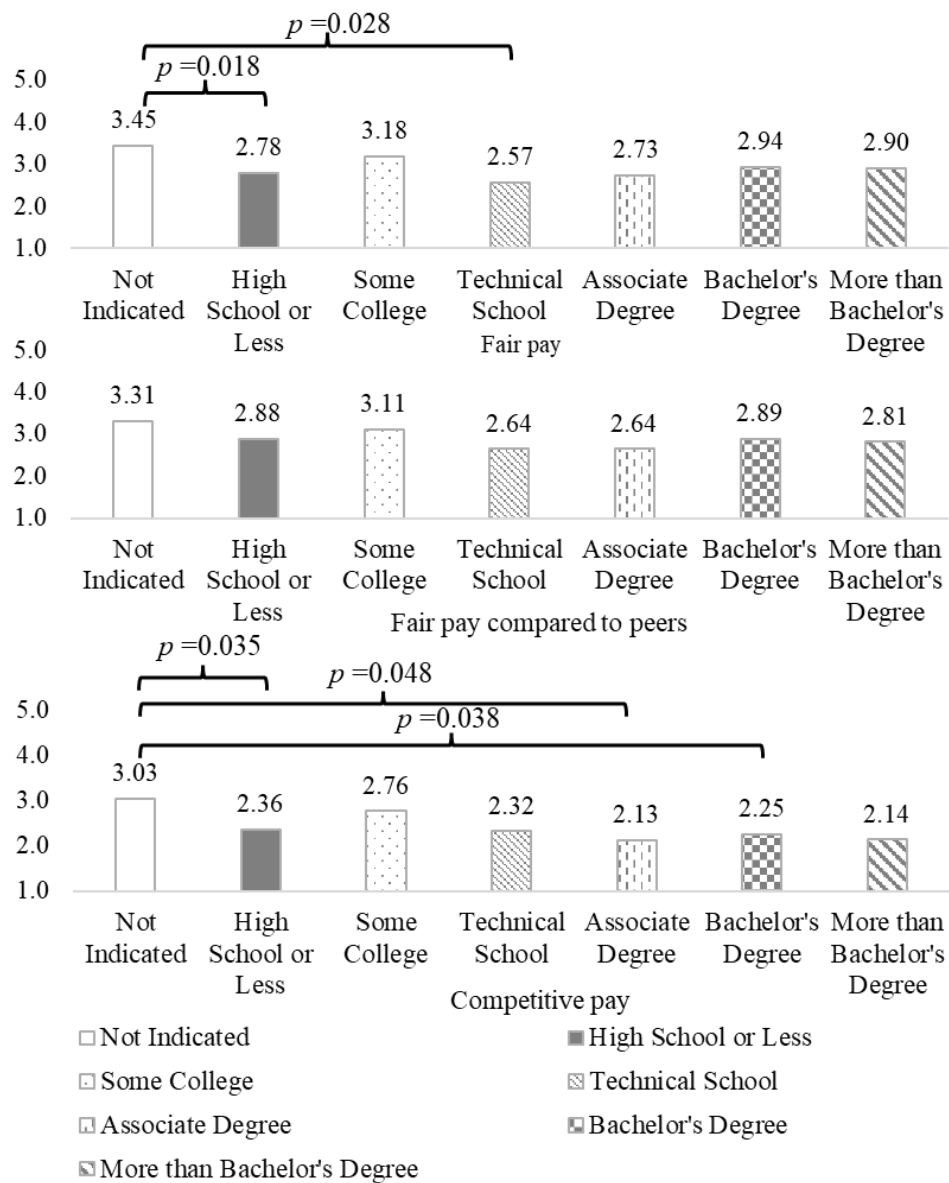


Figure C.46 Compensation by Education.

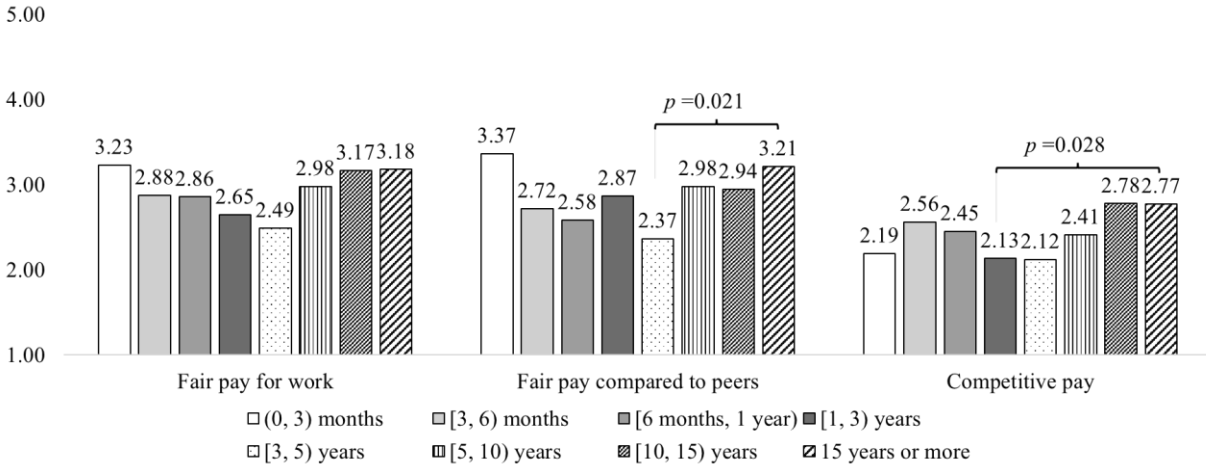


Figure C.47 Compensation by Tenure.

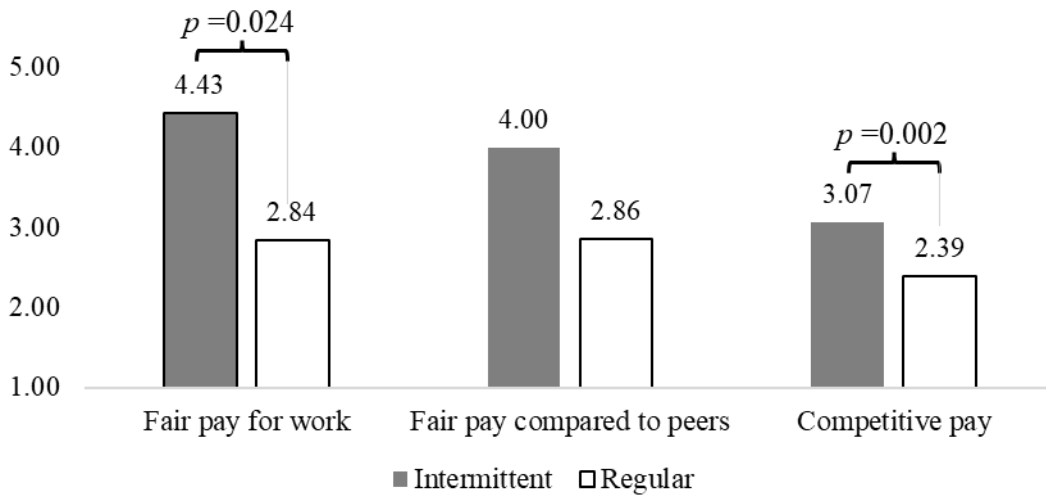


Figure C.48 Compensation by Employment Type.

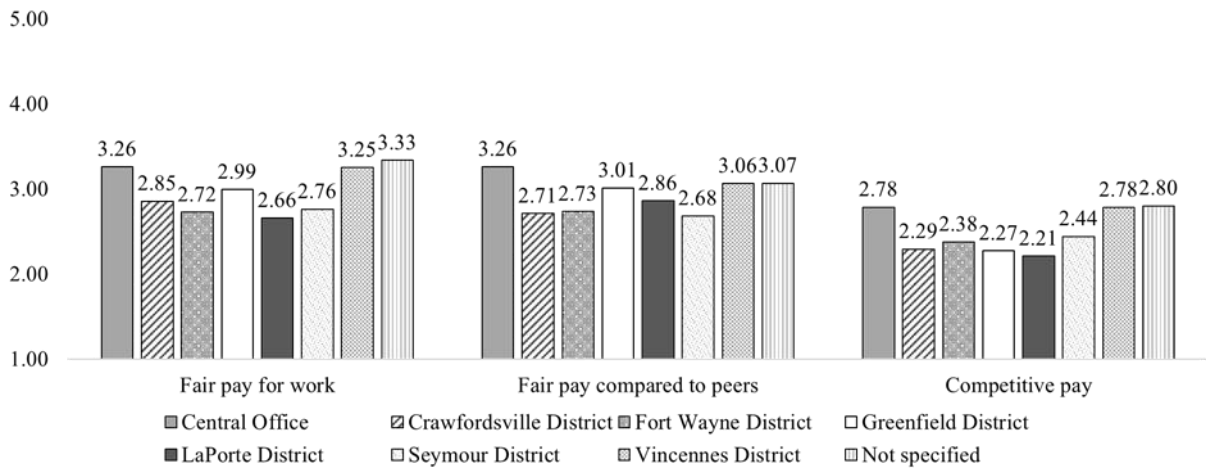


Figure C.49 Compensation by Location.

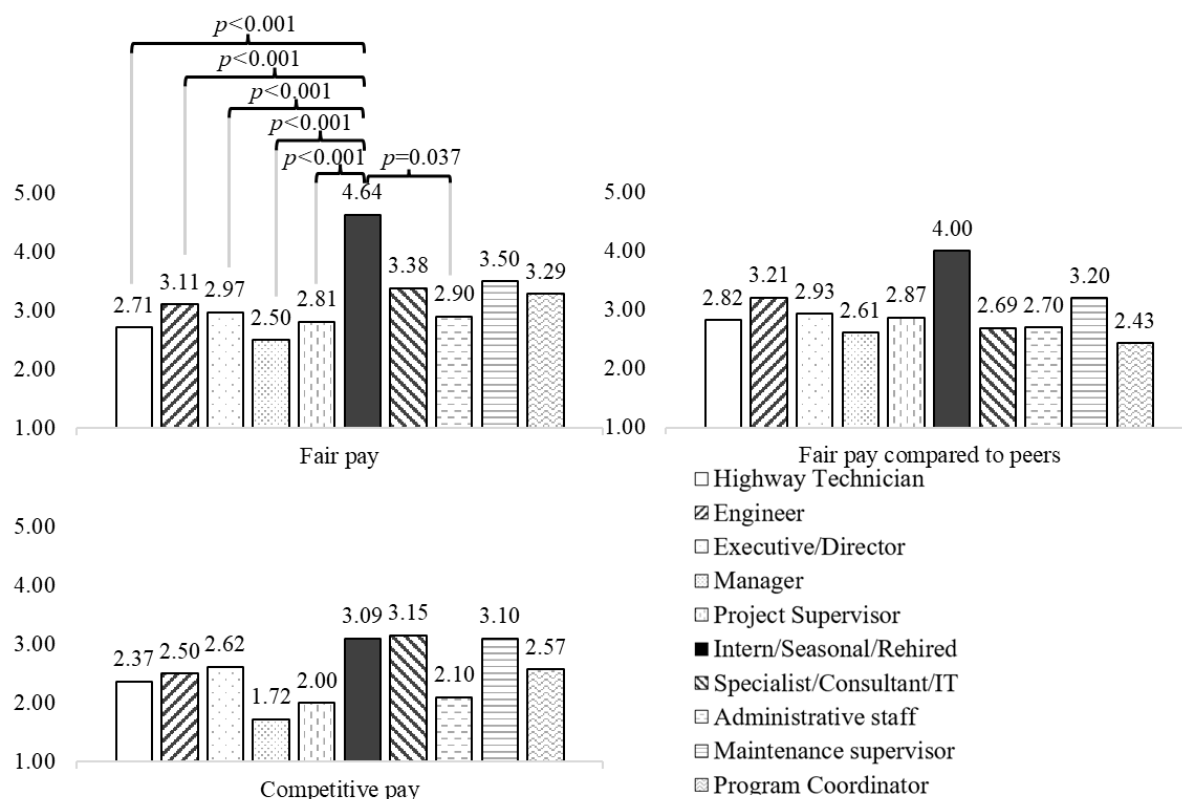


Figure C.50 Compensation by Job Roles.

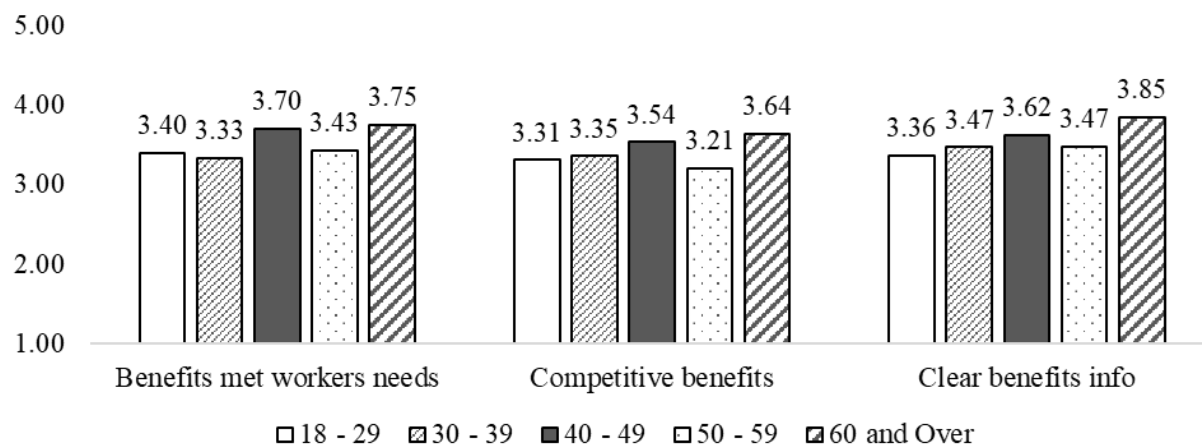


Figure C.51 Benefits by Age.

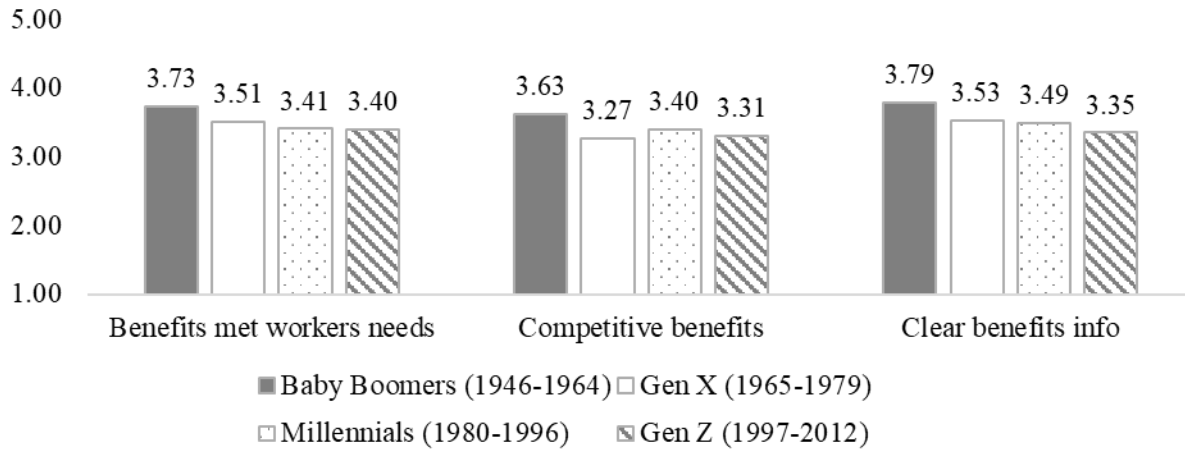


Figure C.52 Benefits by Generation.

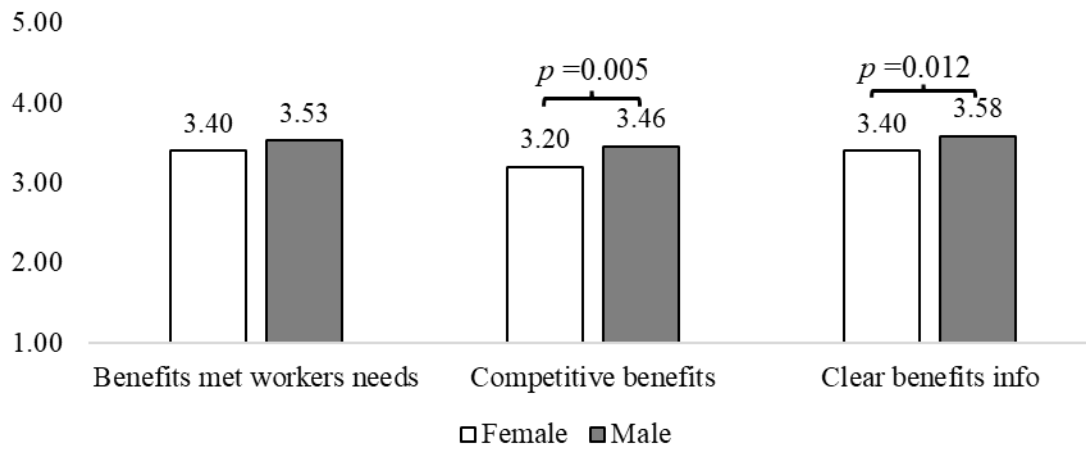


Figure C.53 Benefits by Gender.

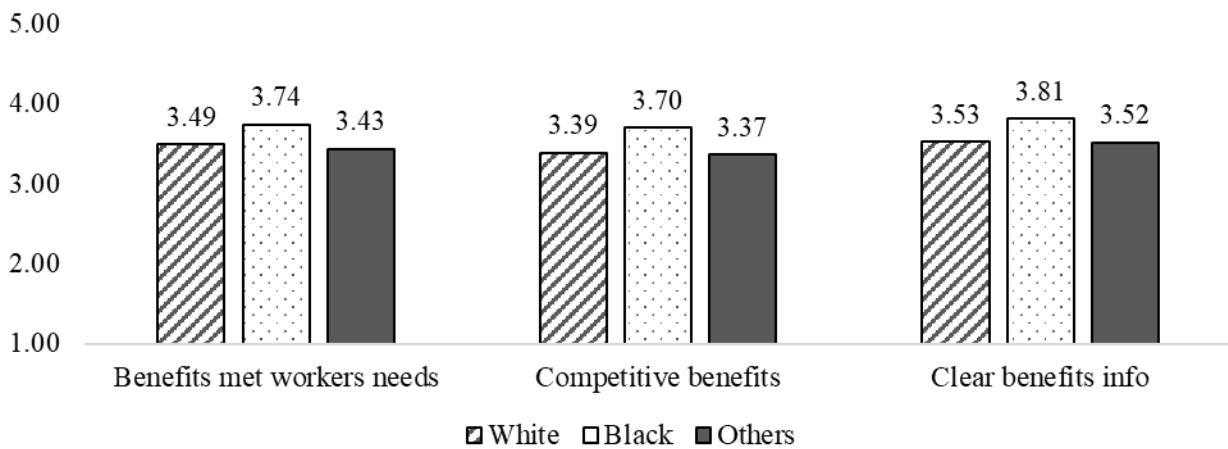


Figure C.54 Benefits by Ethnicity.

Table C.5 Benefit by Education.

Education Group	Key Aspects		
	Benefits met workers needs	Competitive benefits	Clear benefits info
Not Indicated	3.7	3.6	3.8
High School or Less	3.5	3.3	3.4
Some College	3.2	3.2	3.3
Technical School	3.5	3.4	3.5
Associate Degree	3.3	3.2	3.3
Bachelor's Degree	3.8	3.8	3.9
More than Bachelor's Degree	3.6	3.4	3.8

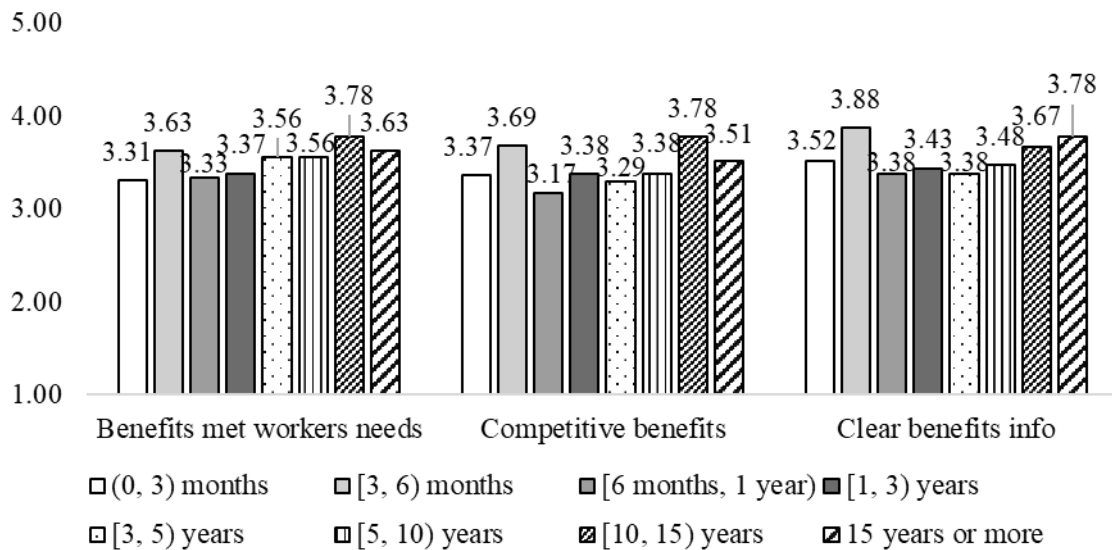


Figure C.55 Benefits by Tenure.

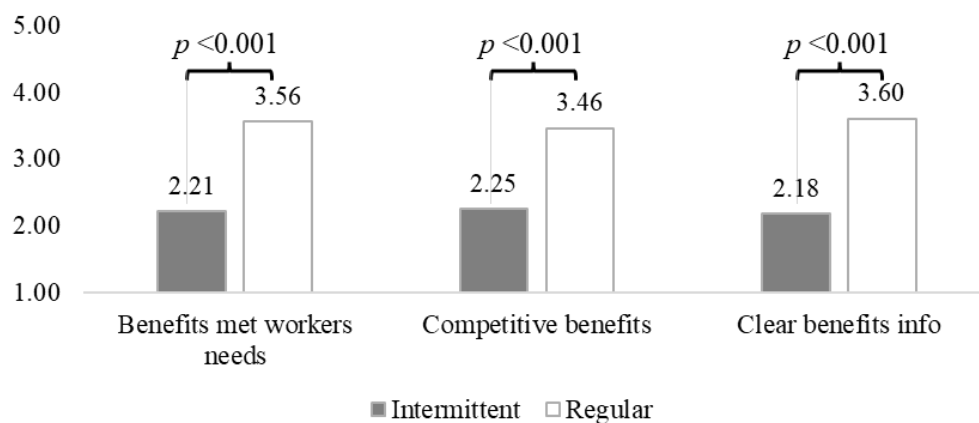


Figure C.56 Benefits by Employment Type.

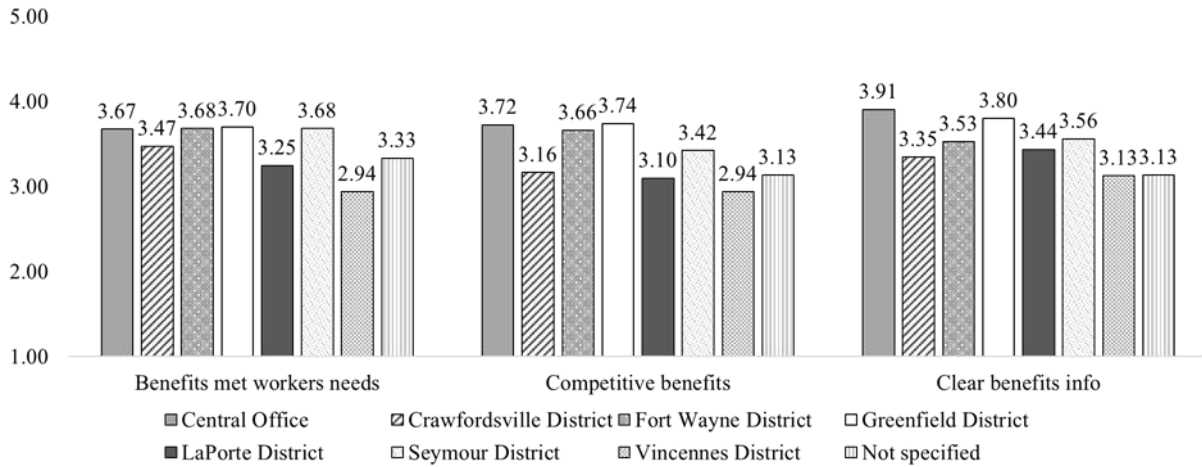


Figure C.57 Benefits by Location.

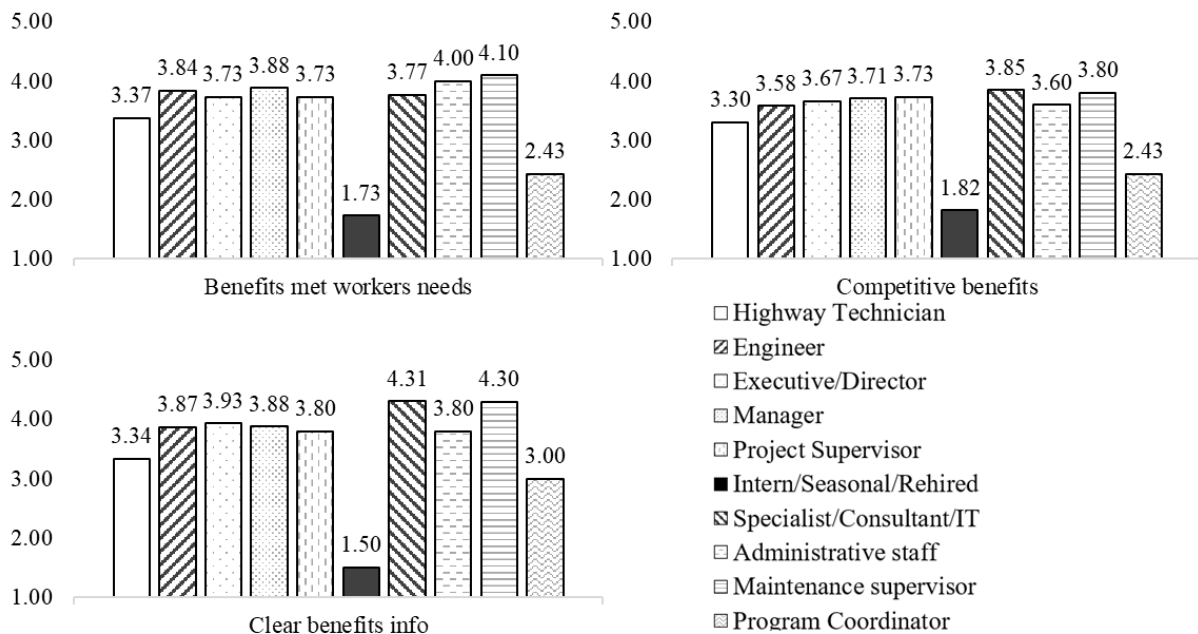


Figure C.58 Benefits by Job Roles.

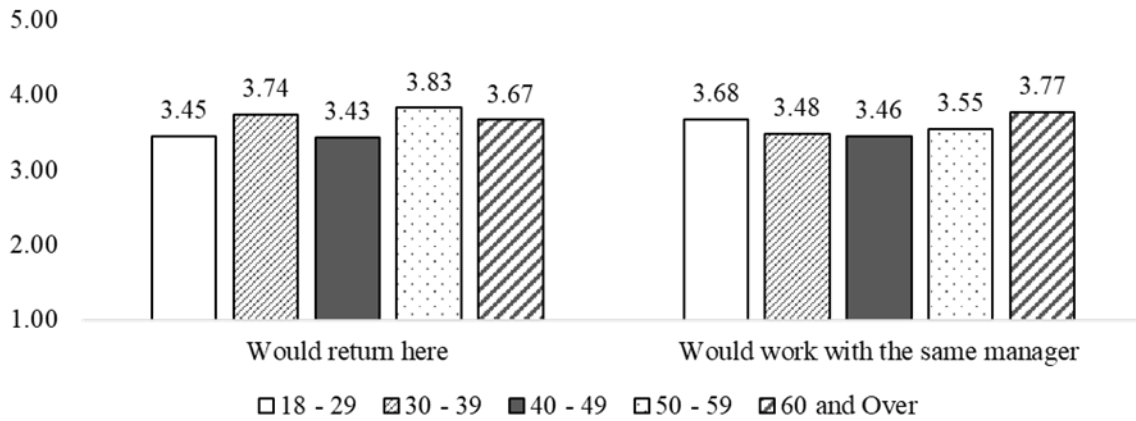


Figure C.59 Rehire Potential by Age.

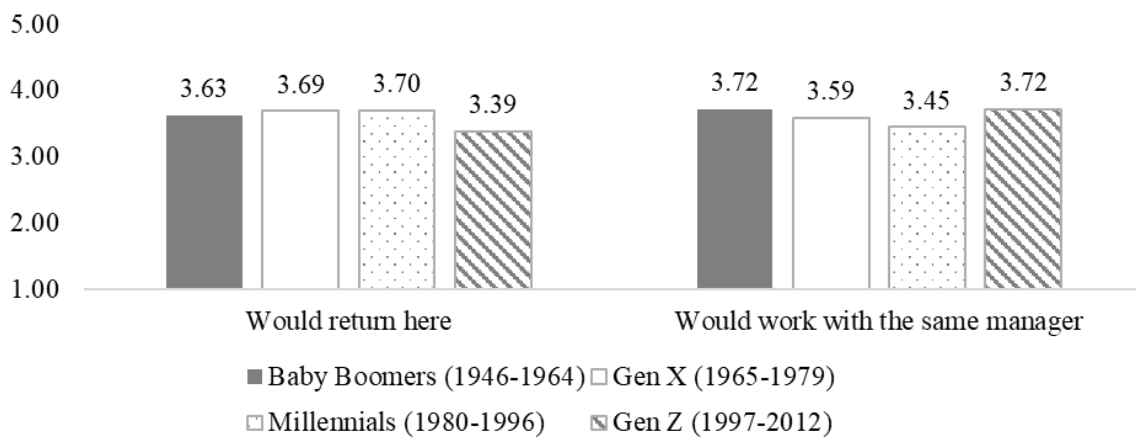


Figure C.60 Rehire Potential by Generation.

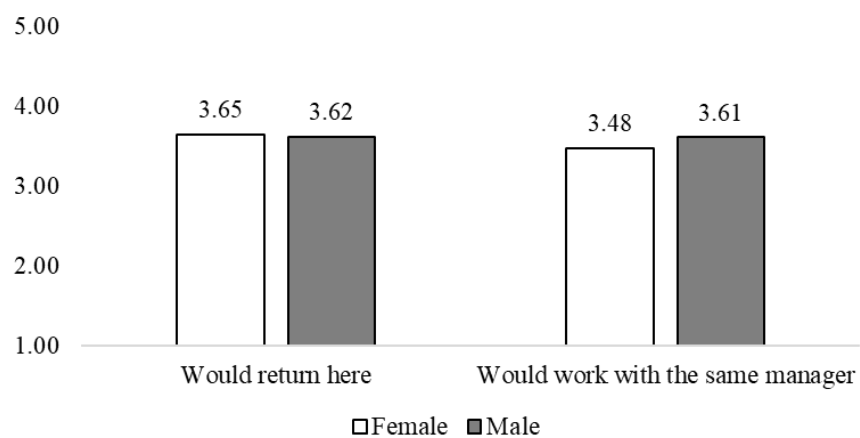


Figure C.61 Rehire Potential by Gender.

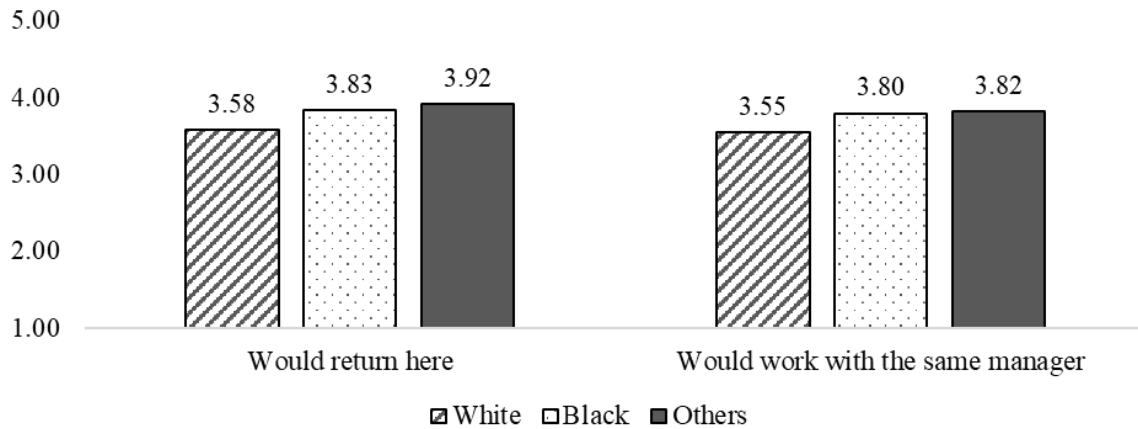


Figure C.62 Rehire Potential by Ethnicity.

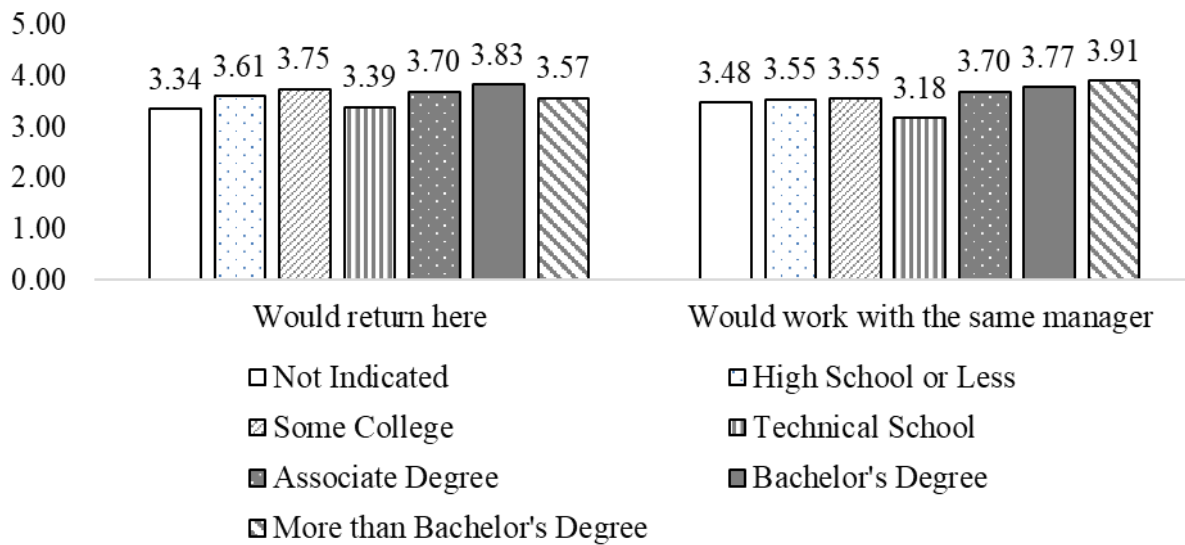


Figure C.63 Rehire Potential by Education.

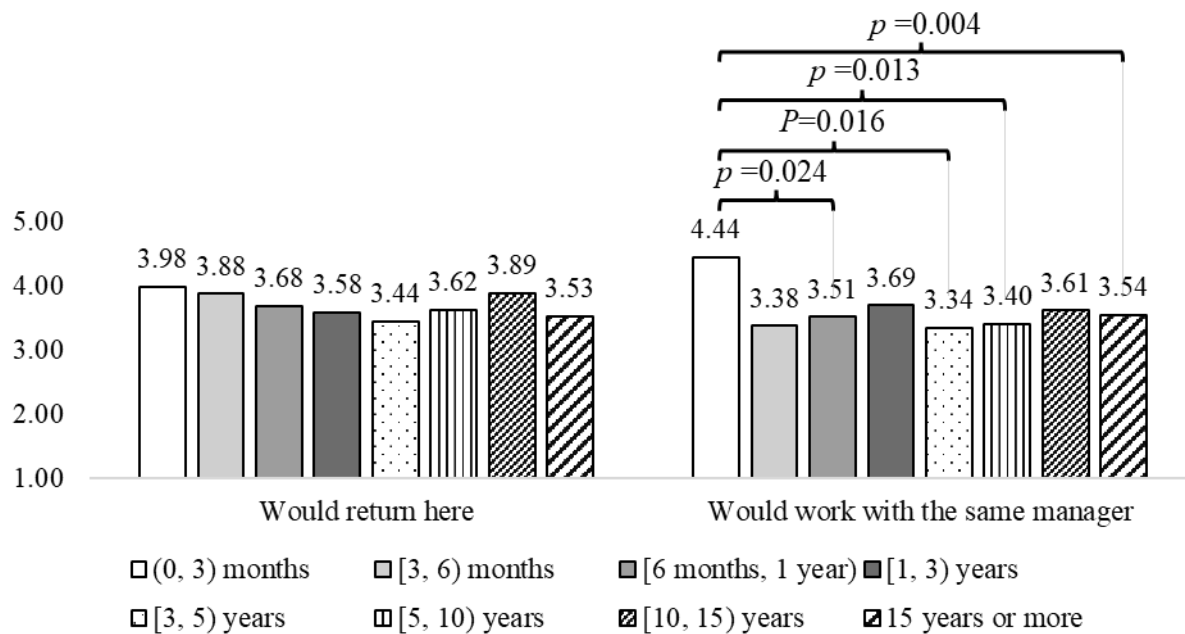


Figure C.64 Rehire Potential by Tenure.

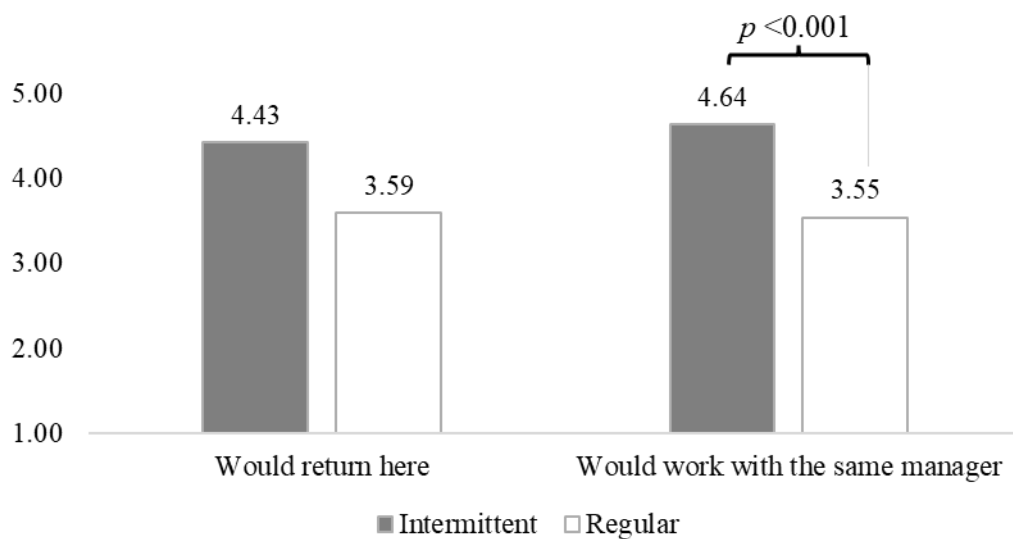


Figure C.65 Rehire Potential by Employment Type.

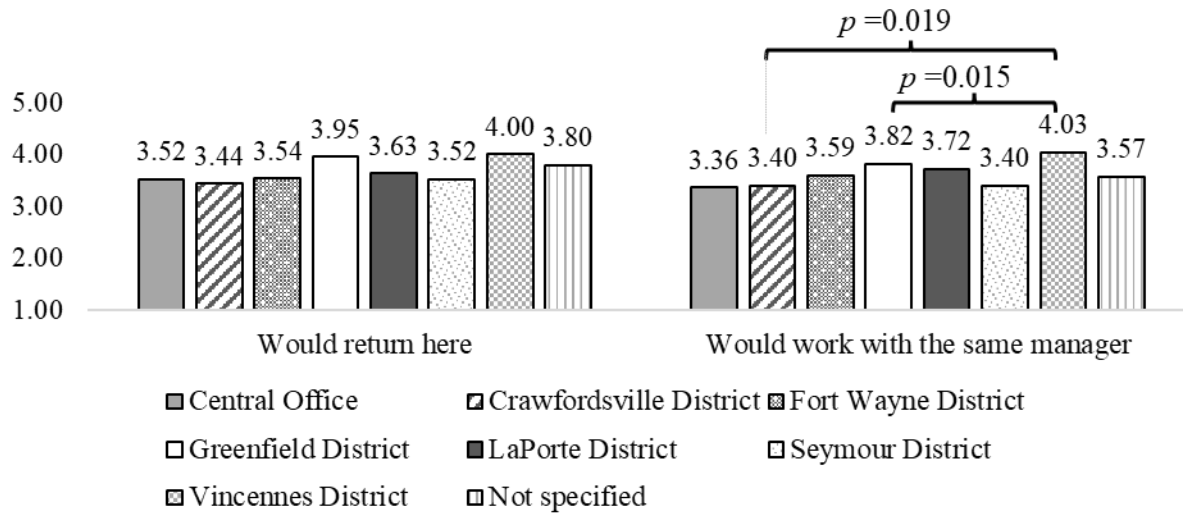


Figure C.66 Rehire Potential by Location.

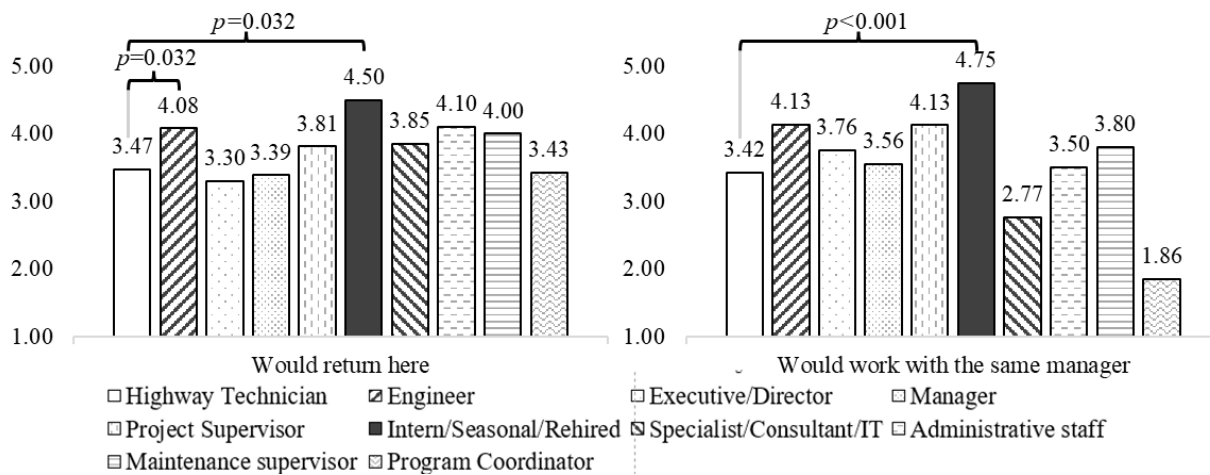


Figure C.67 Rehire Potential by Job Roles.

Appendix D. Rating Items on Exit Factors from the Exit Survey

Q1: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Compensation

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q2: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Benefits

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q3: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Immediate Supervisor

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q4: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Senior Leadership

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q5: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Job Duties

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q6: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Growth Opportunities

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q7: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Schedule

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q8: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Workload

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q9: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Culture

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q10: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Communication

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q11: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Job Security

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

Q12: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Expectations vs Reality

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

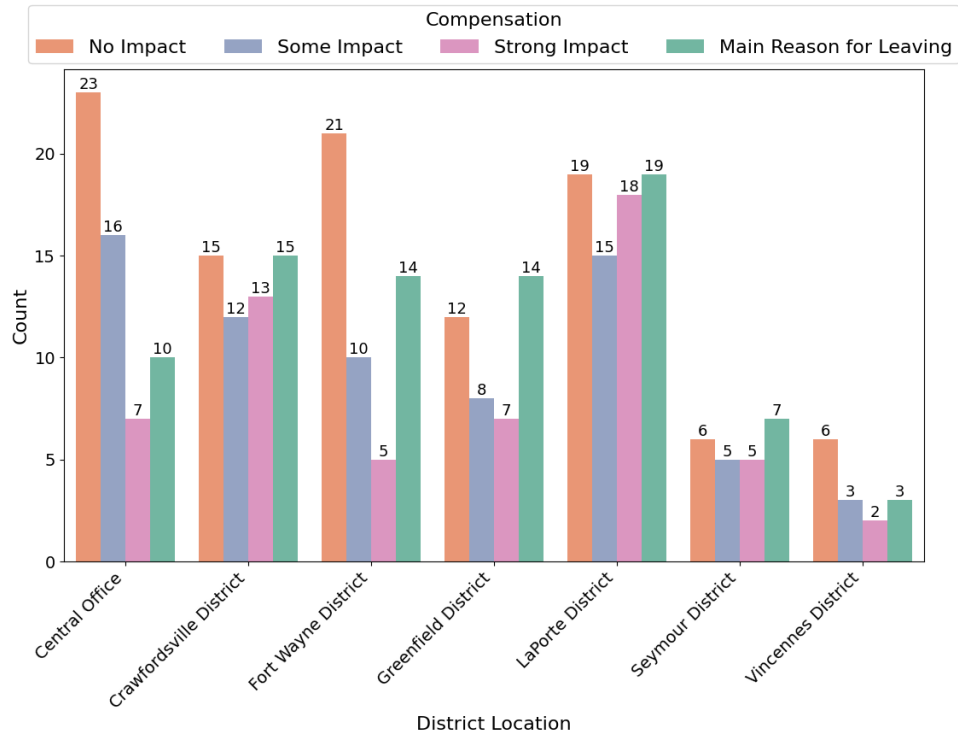
Q13: Please rate the following factors in terms of how much impact they had on your decision to leave the organization. / Personal Reason

- No Impact
- Some Impact
- Strong Impact
- Main Reason for Leaving

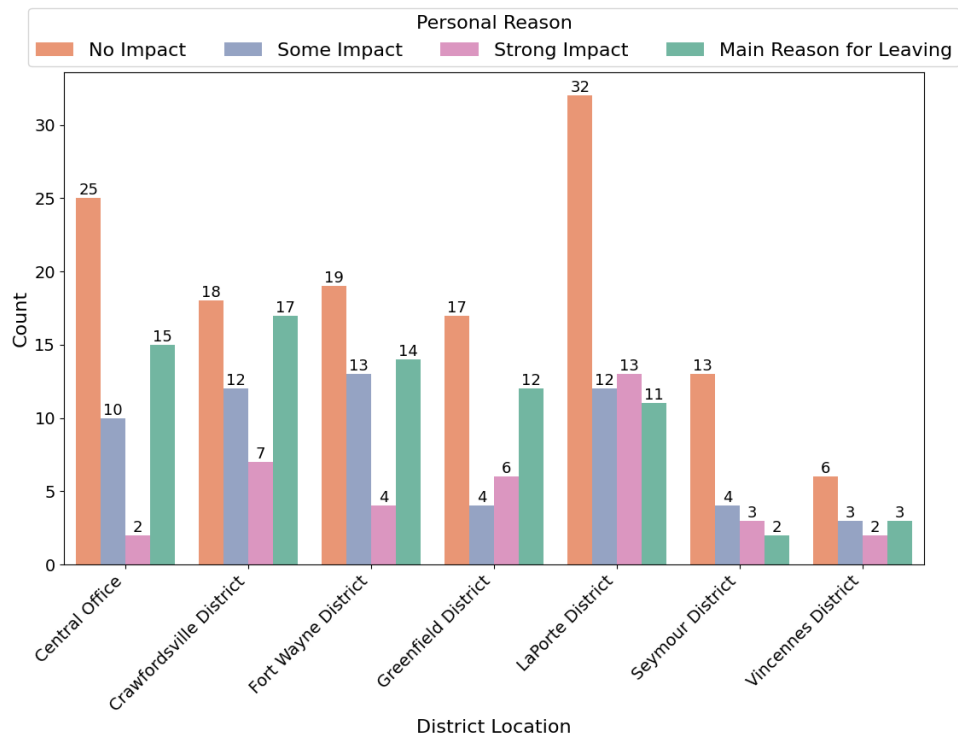
Appendix E. Comments from Departing Employees in the Exit Survey (Open Questions)

- Q1: Please explain what was different than you expected?
- Q2: What would it take for you to return to the organization?
- Q3: What were your most important reasons for leaving the organization?
- Q4: What recommendations do you have to make the organization a better place to work?
- Q5: If you know of any compliance or integrity issues that have not been addressed with the organization (e.g., improper, unethical or unlawful behavior), please explain.
- Q6: Is there anything else you would like to add?

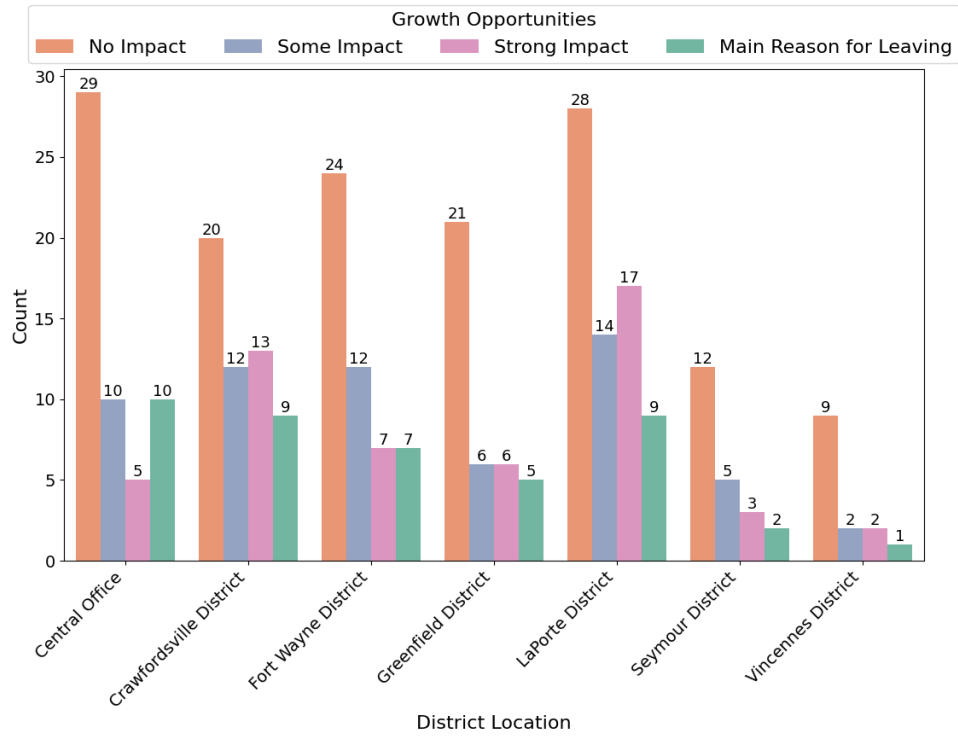
Appendix F. Figures From Section 2.2.4



(a) Compensation

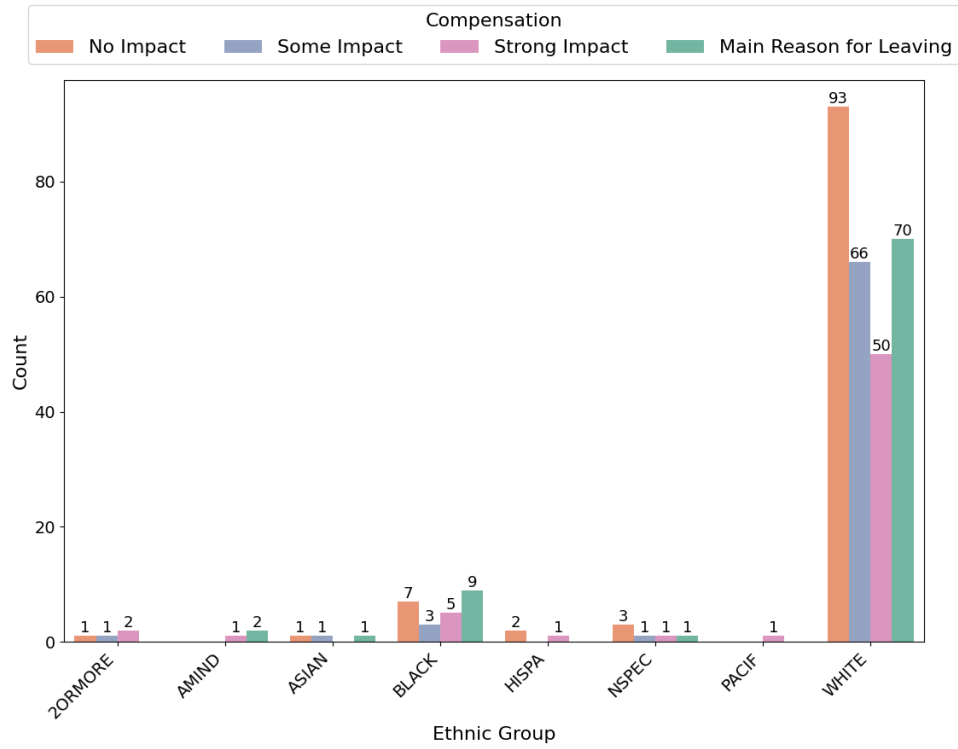


(b) Personal Reasons

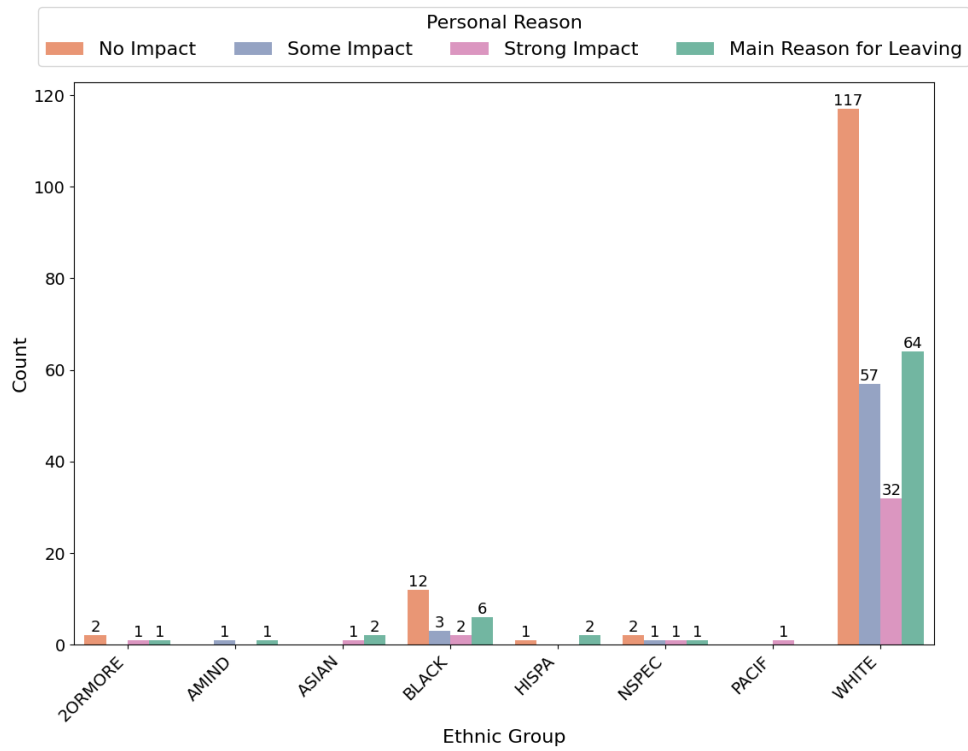


(c) Growth Opportunities

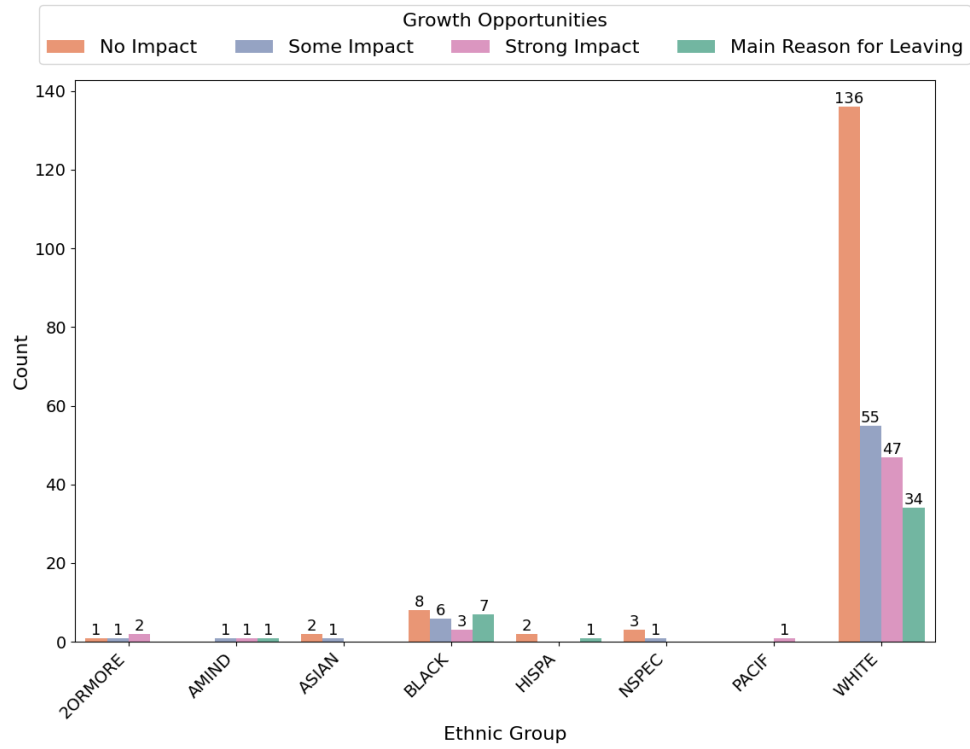
Figure F.1 The Distribution of High-Impact Exit Factors by District Location Groups.



(a) Compensation

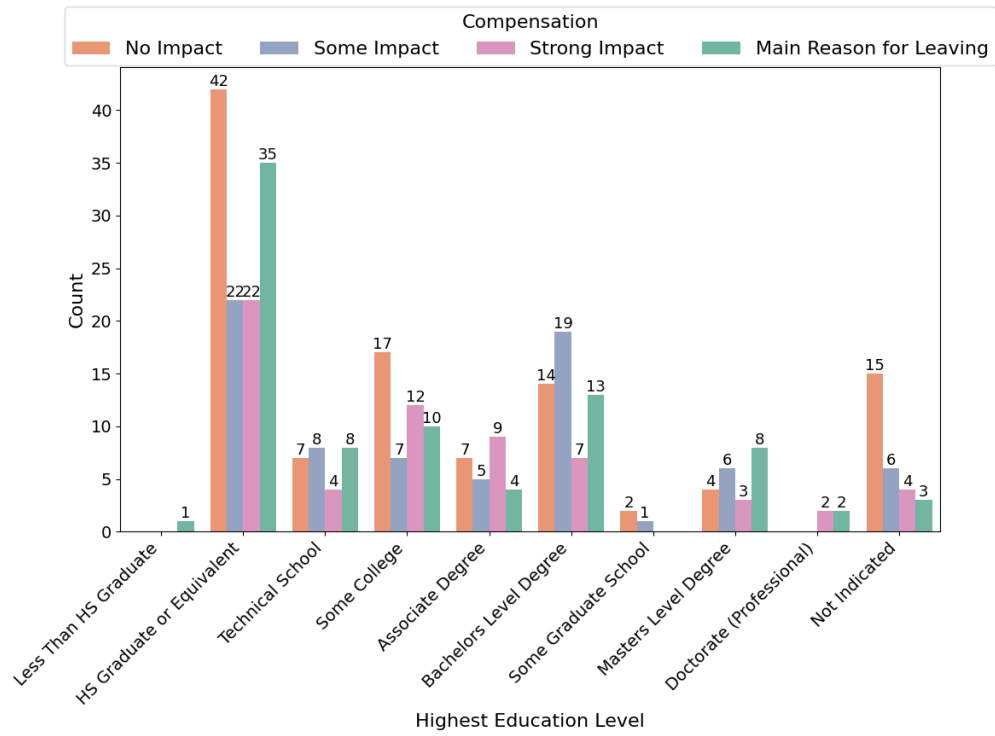


(b) Personal Reasons

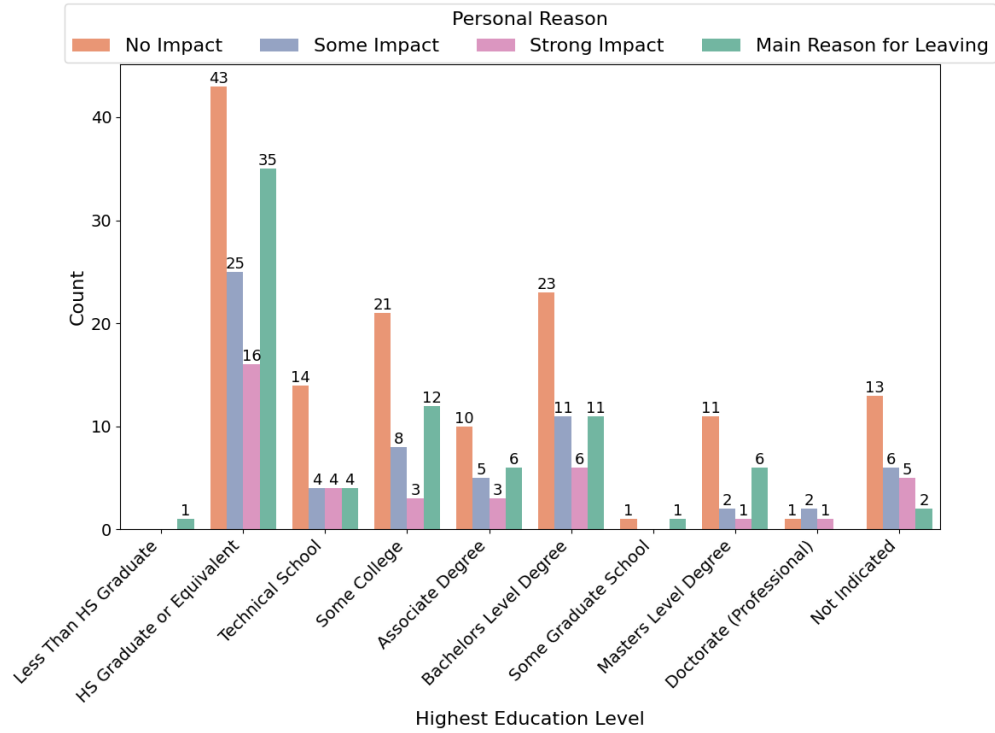


(c) Growth Opportunities

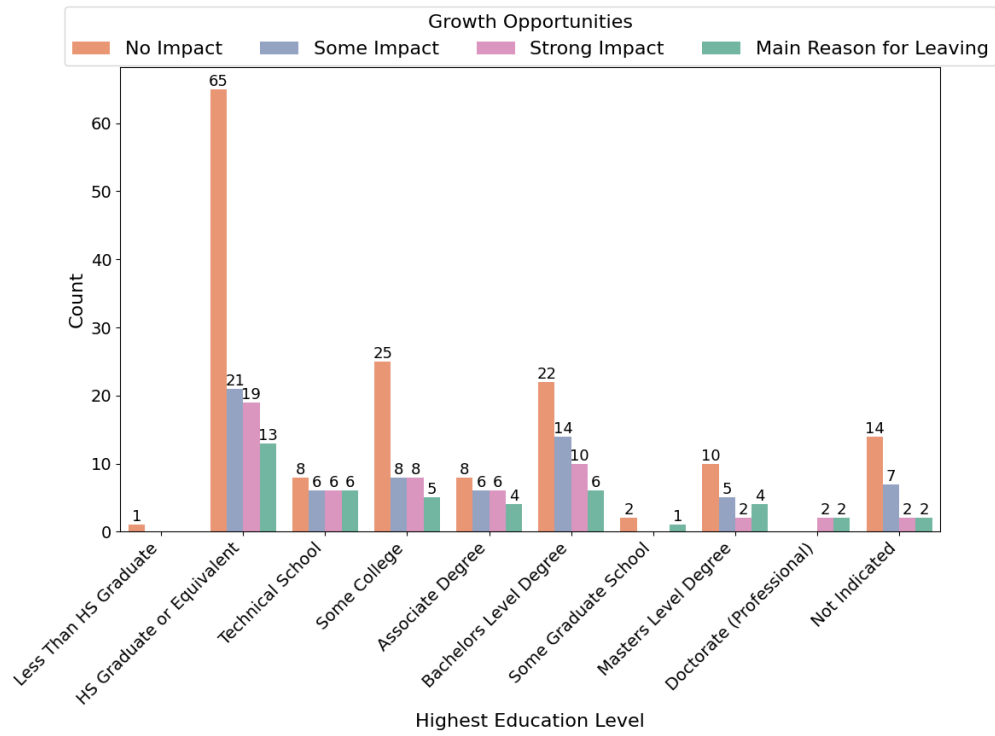
Figure F.2 The Distribution of High-Impact Exit Factors by Ethnic Groups.



(a) Compensation

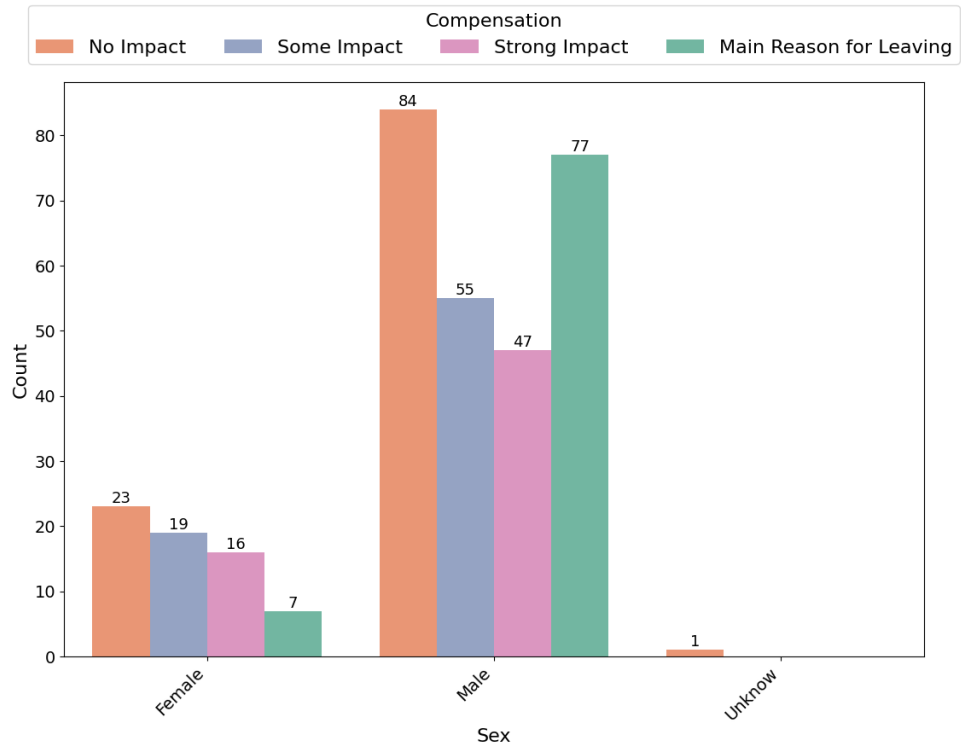


(b) Personal Reasons

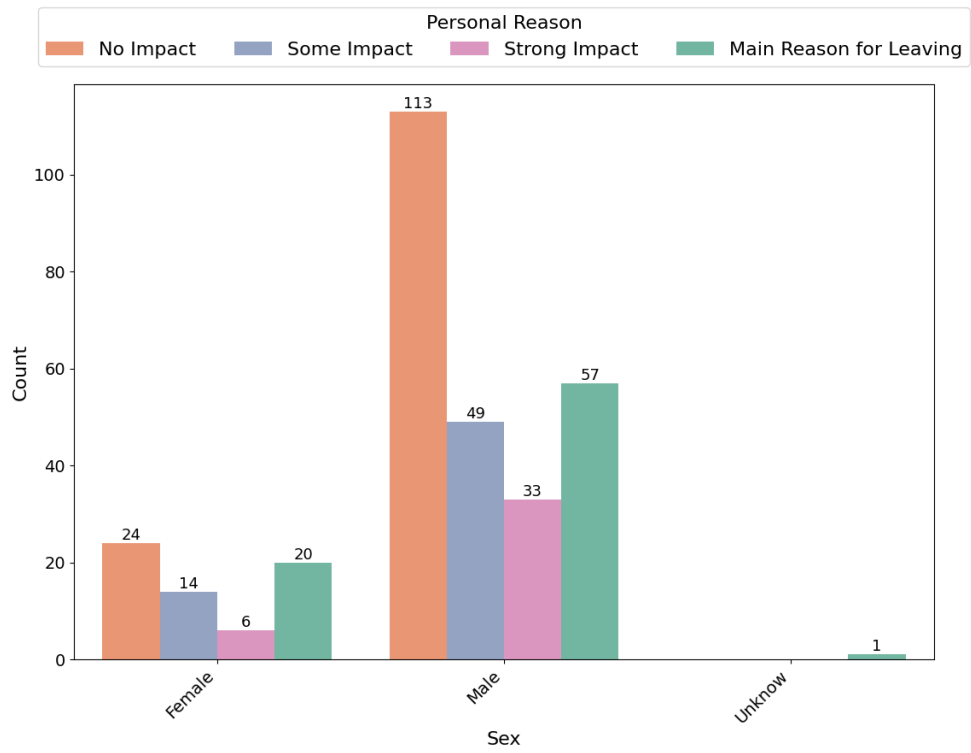


(c) Growth Opportunities

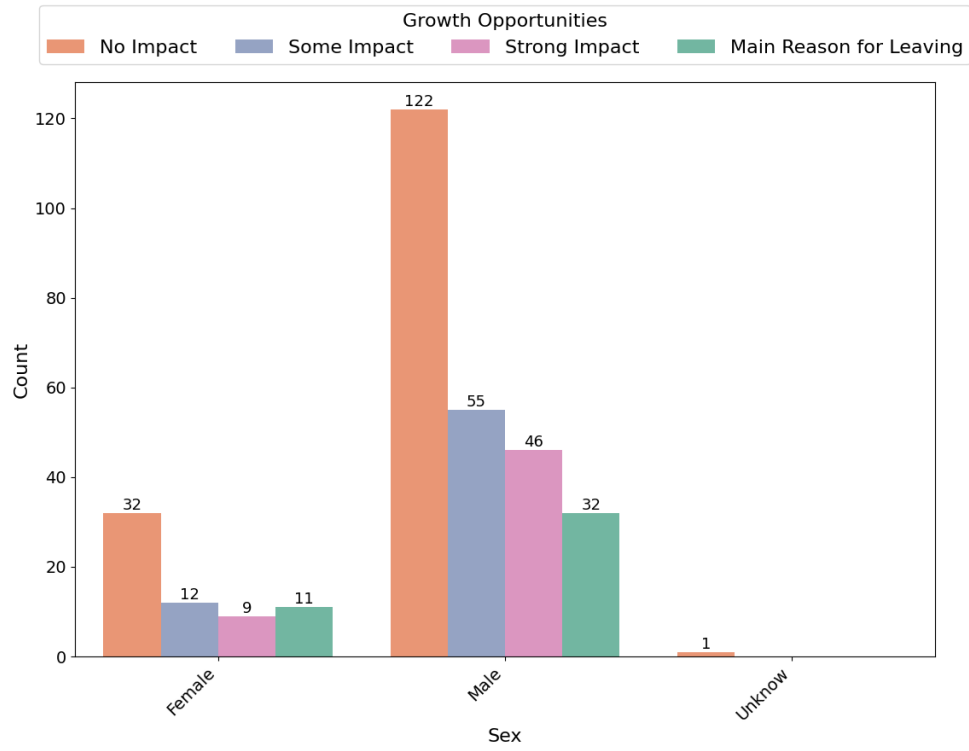
Figure F.3 The Distribution of High-Impact Exit Factors by Highest Education Level.



(a) Compensation

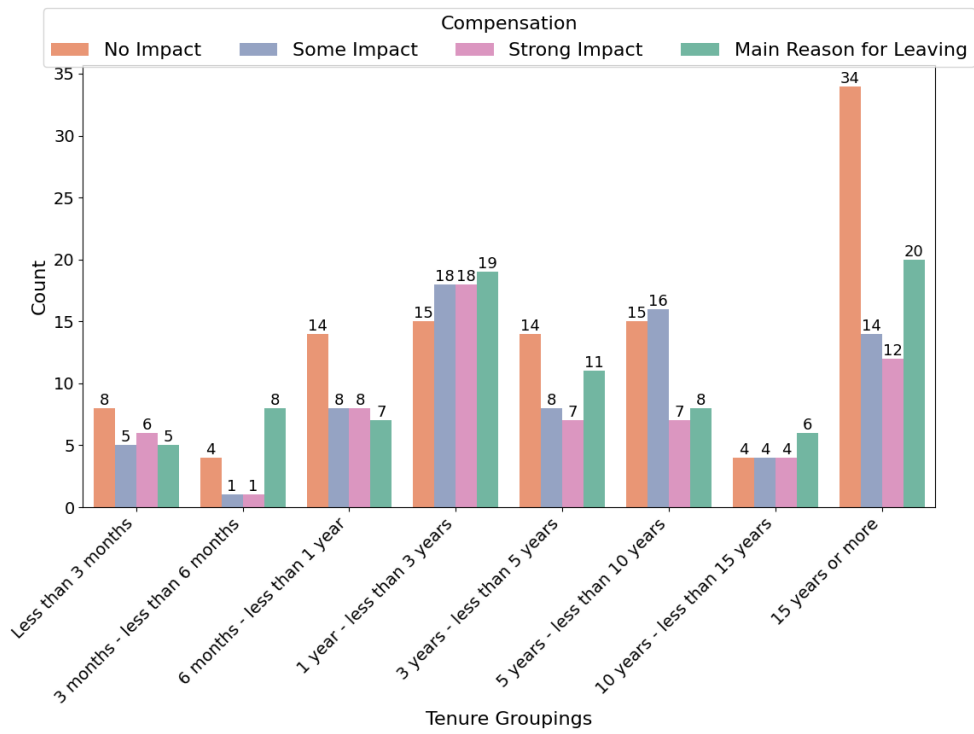


(b) Personal Reasons

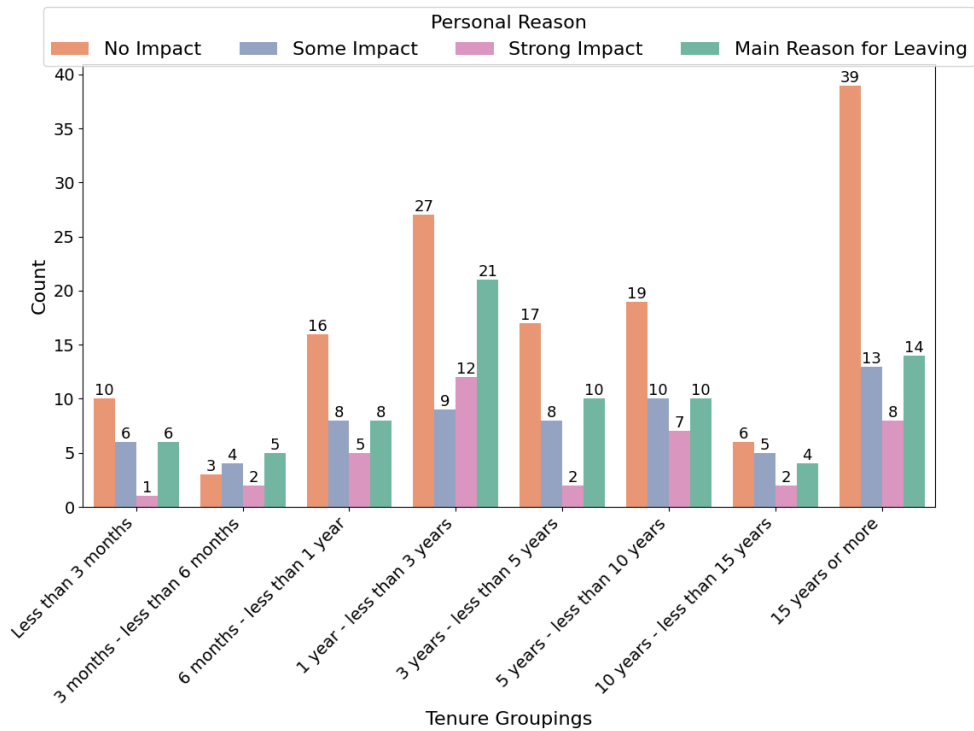


(c) Growth Opportunities

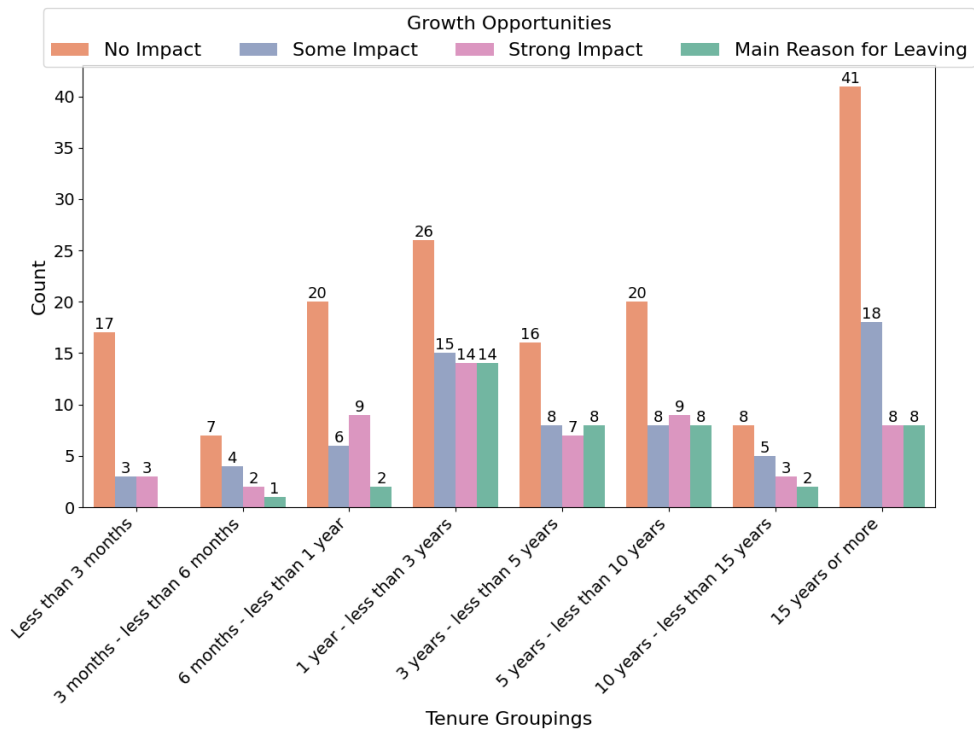
Figure F.4 The Distribution of High-Impact Exit Factors by Gender Groups.



(a) Compensation



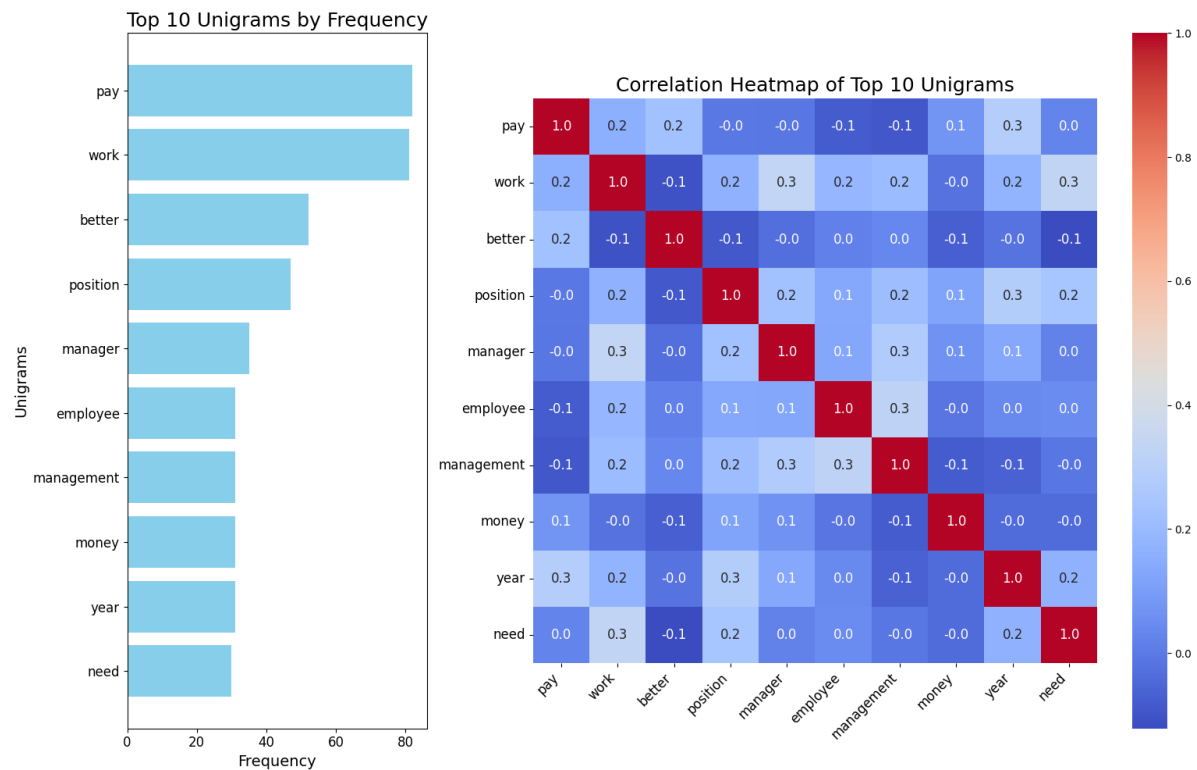
(b) Personal Reasons



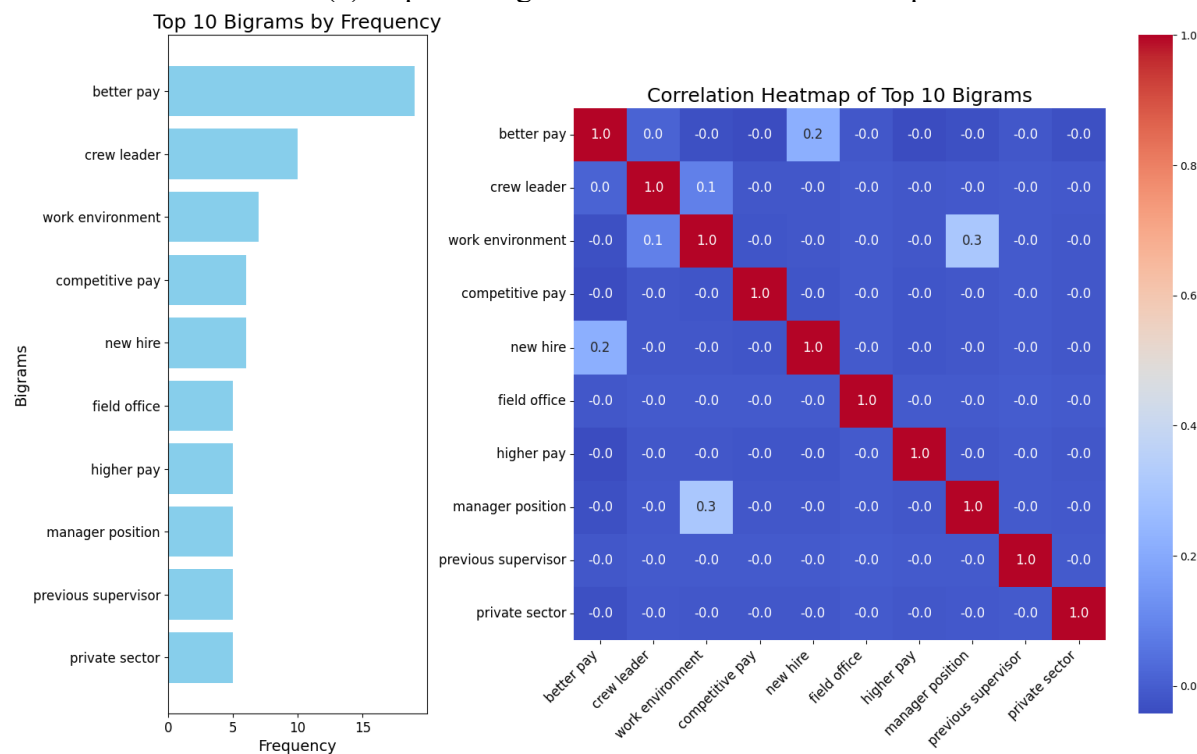
(c) Growth Opportunities

Figure F.5 The Distribution of High-Impact Exit Factors by Tenure Groups.

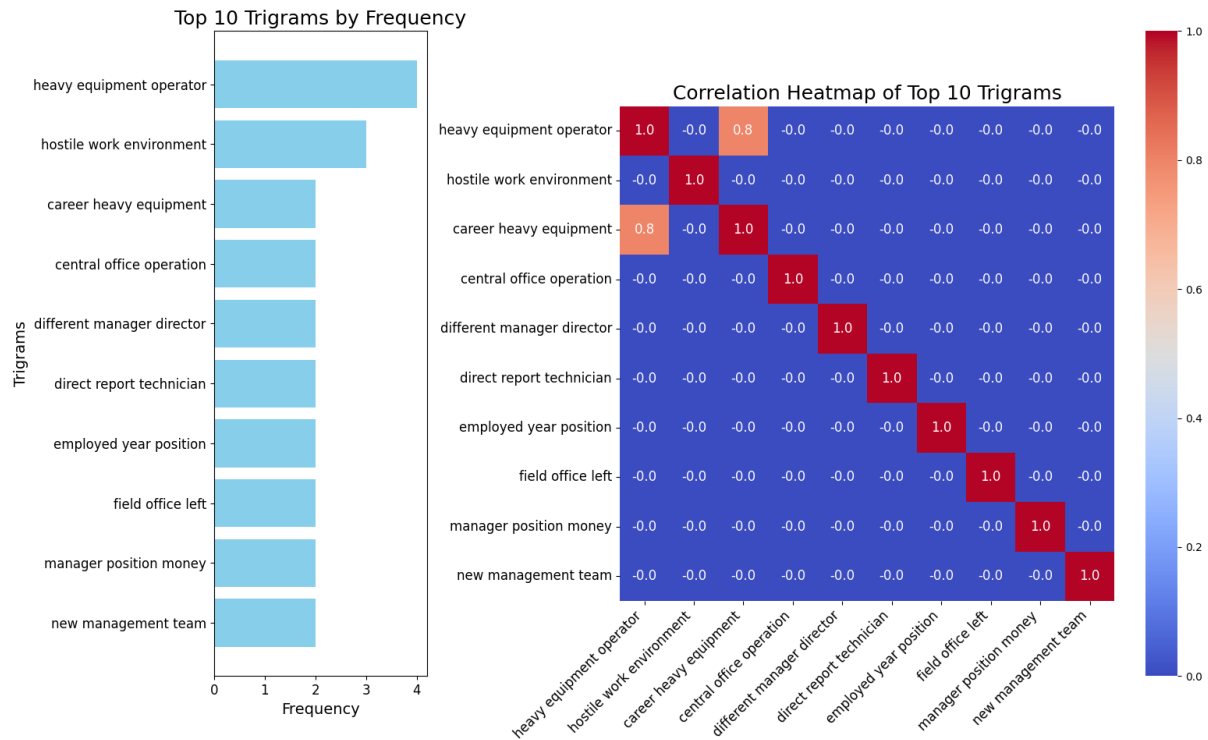
Appendix G. Figures From Section 2.3



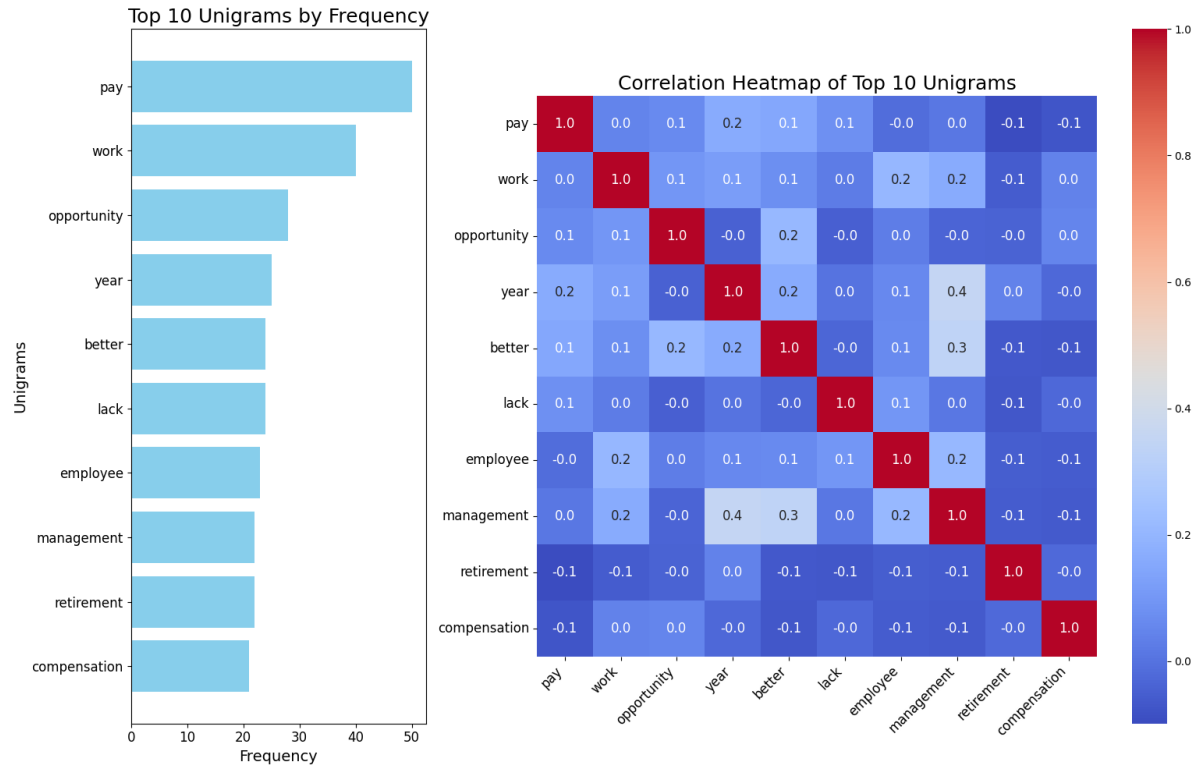
(a) Top 10 Unigrams and Correlation Heatmap



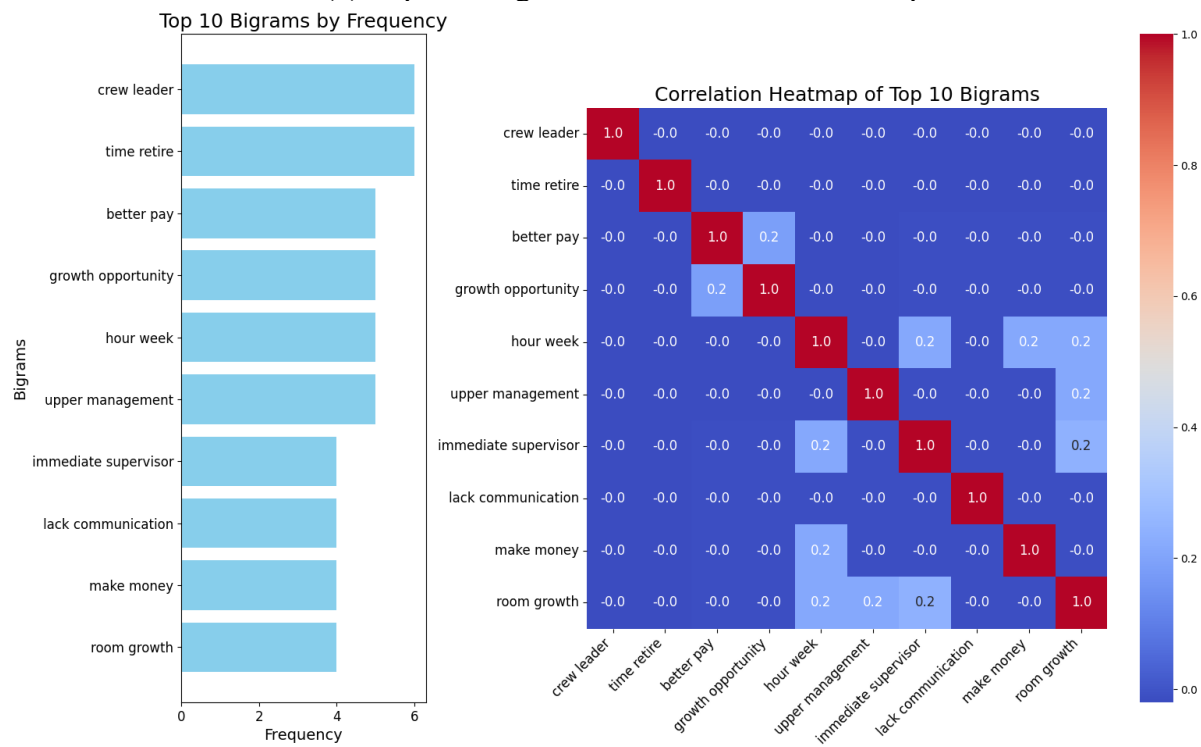
(b) Top 10 Bigrams and Correlation Heatmap



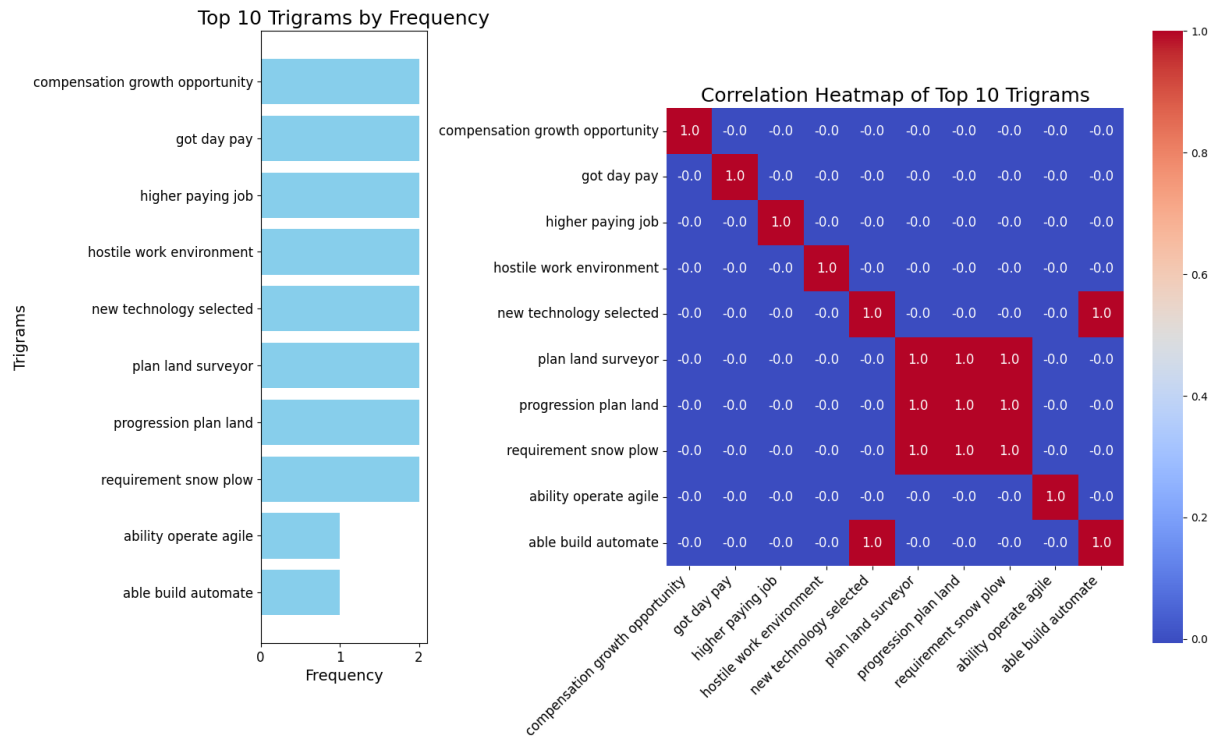
(c) Top 10 Trigrams and Correlation Heatmap
Figure G.1 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 2.



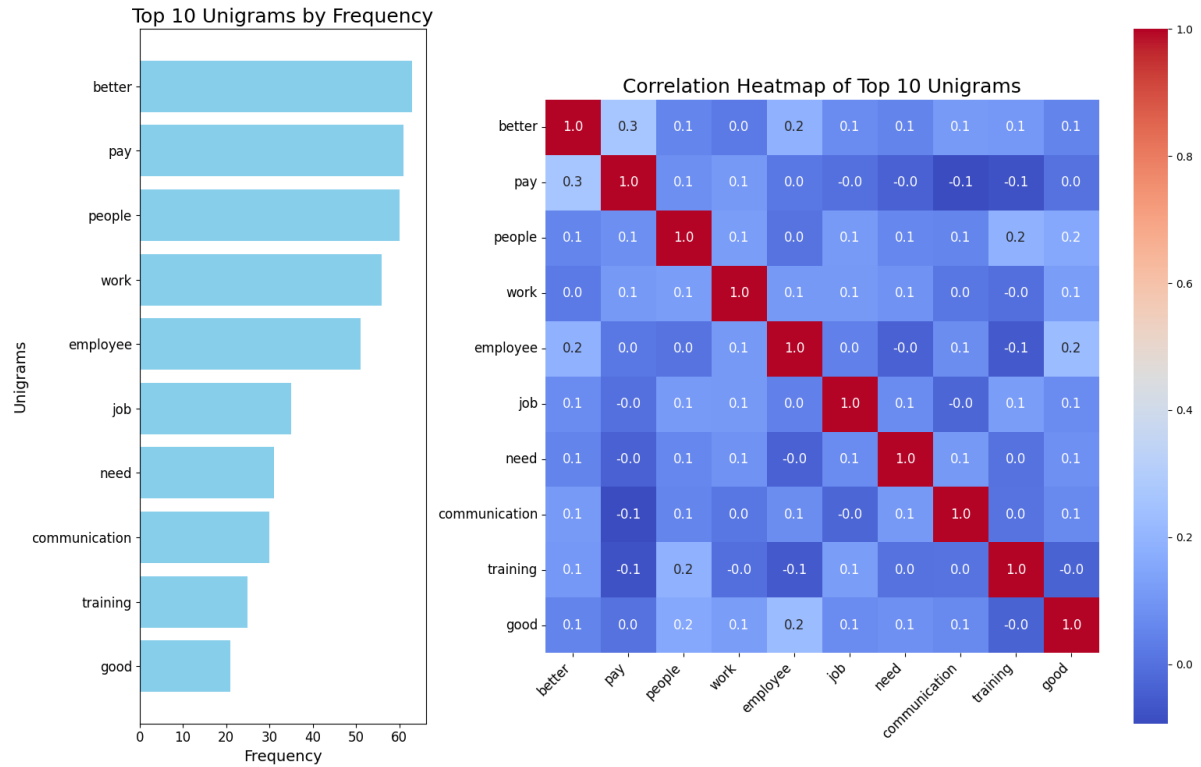
(a) Top 10 Unigrams and Correlation Heatmap



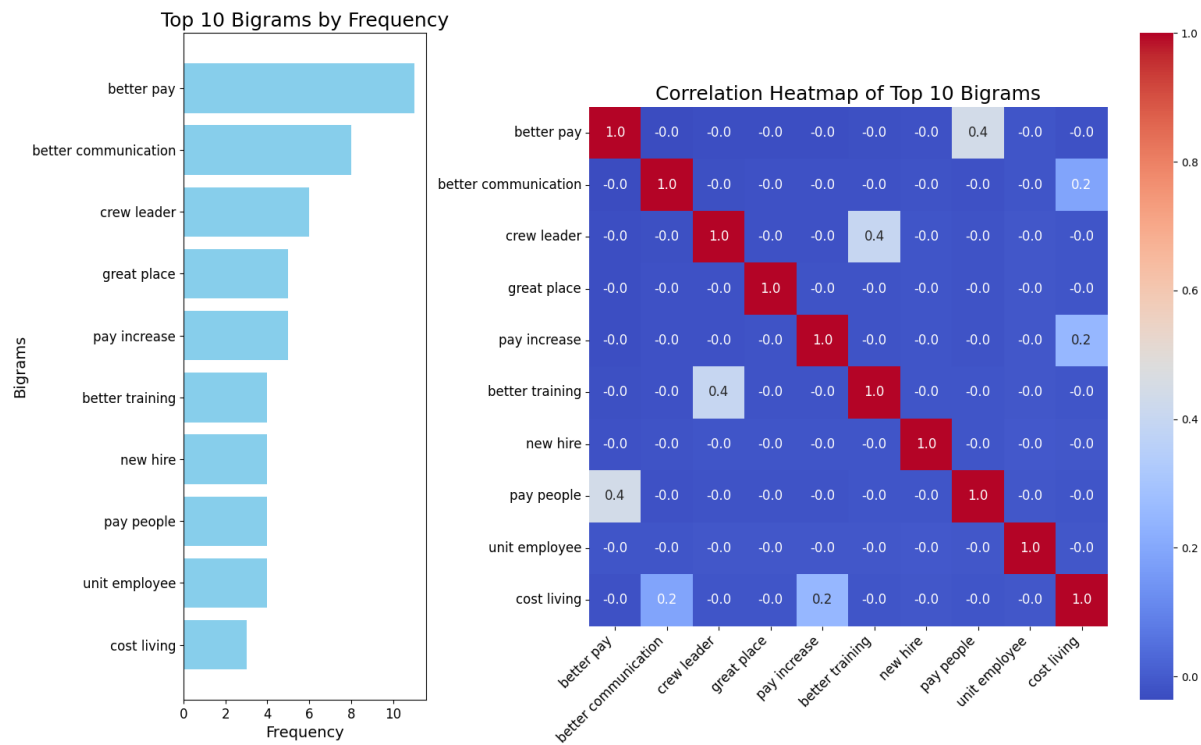
(b) Top 10 Bigrams and Correlation Heatmap



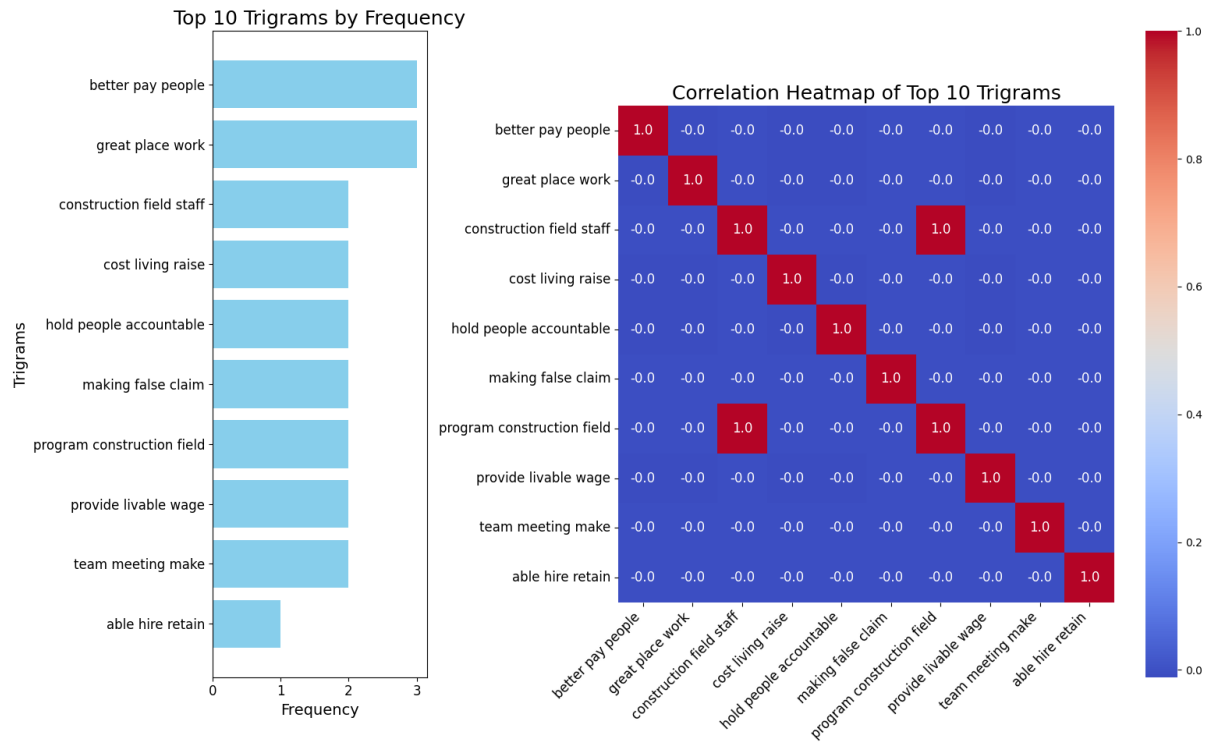
(c) Top 10 Trigrams and Correlation Heatmap
Figure G.2 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 3.



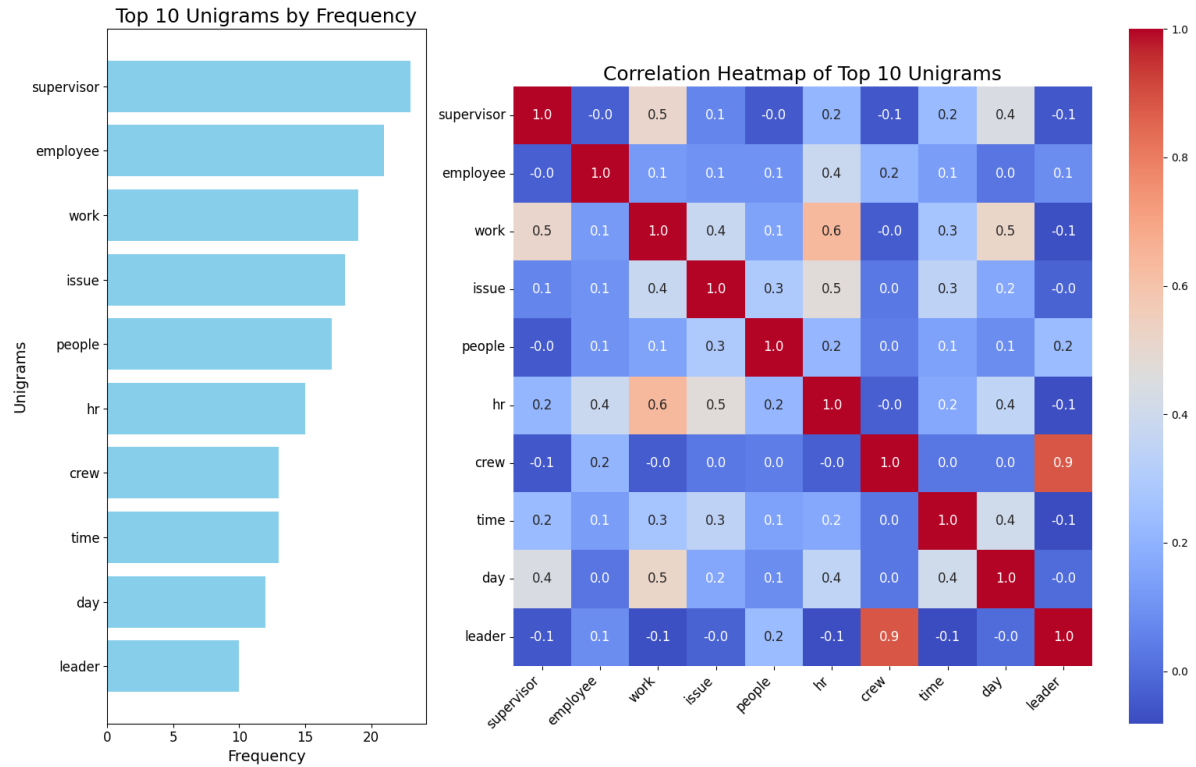
(a) Top 10 Unigrams and Correlation Heatmap



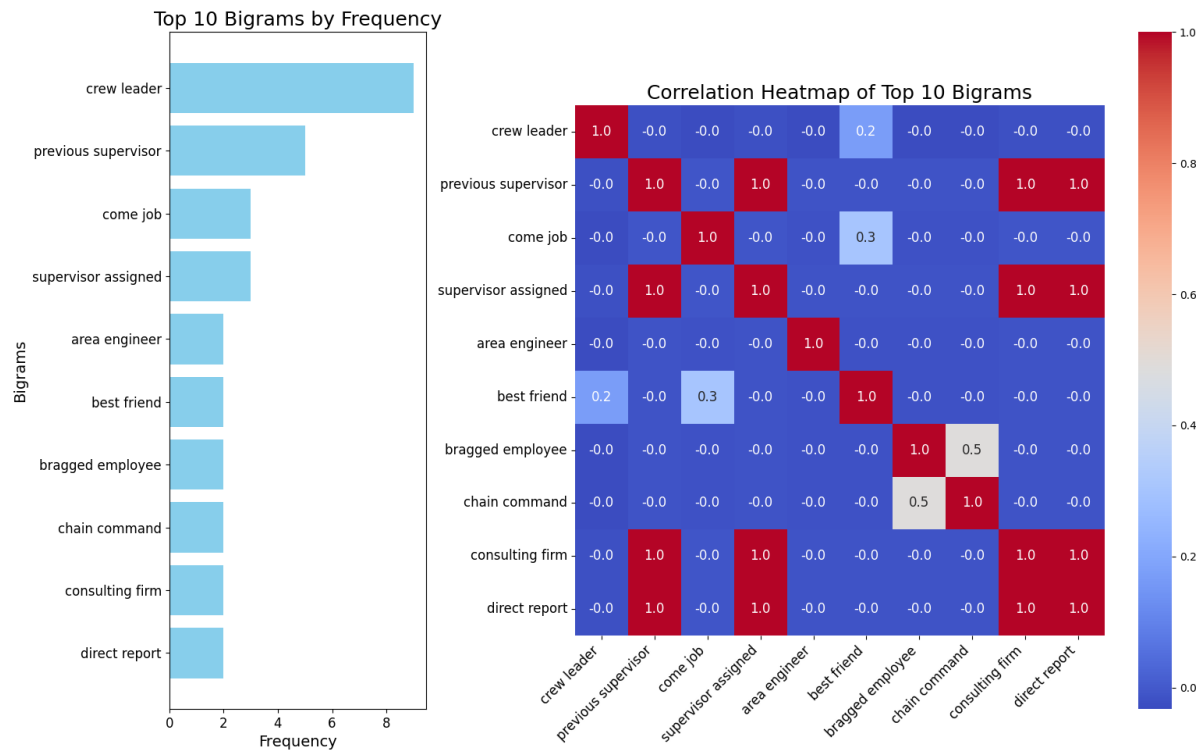
(b) Top 10 Bigrams and Correlation Heatmap



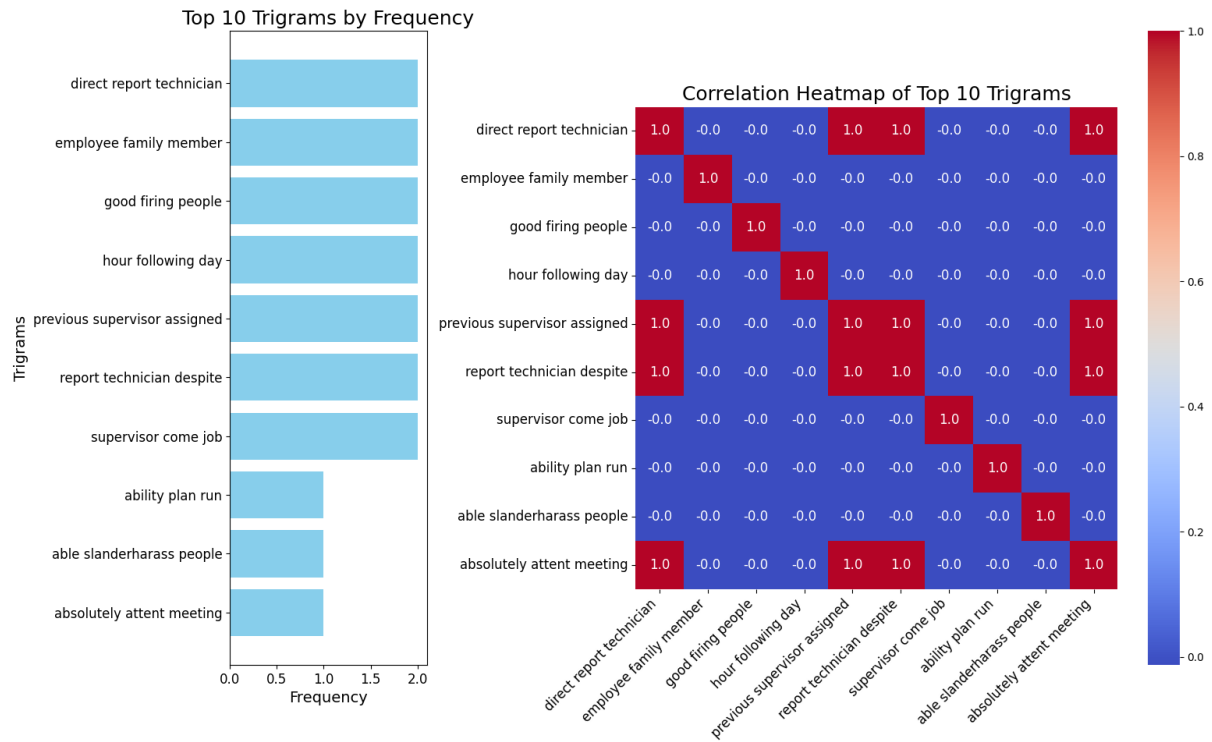
(c) Top 10 Trigrams and Correlation Heatmap
Figure G.3 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 4



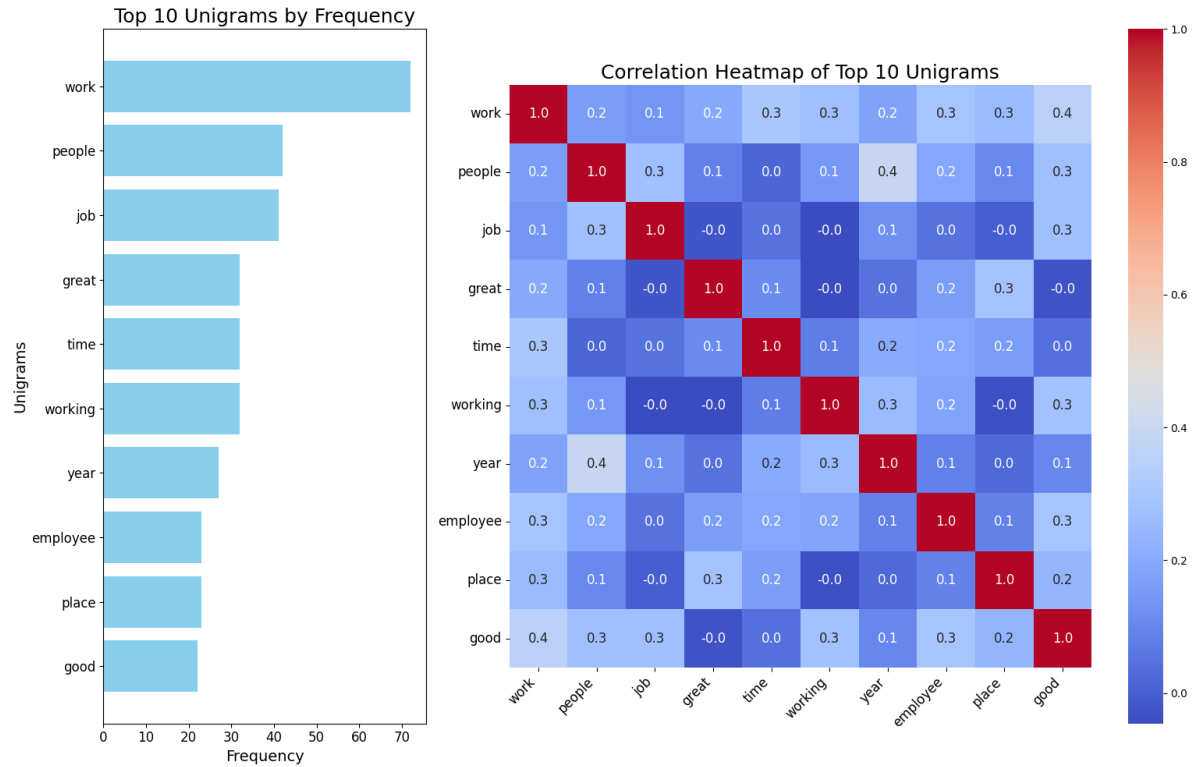
(a) Top 10 Unigrams and Correlation Heatmap



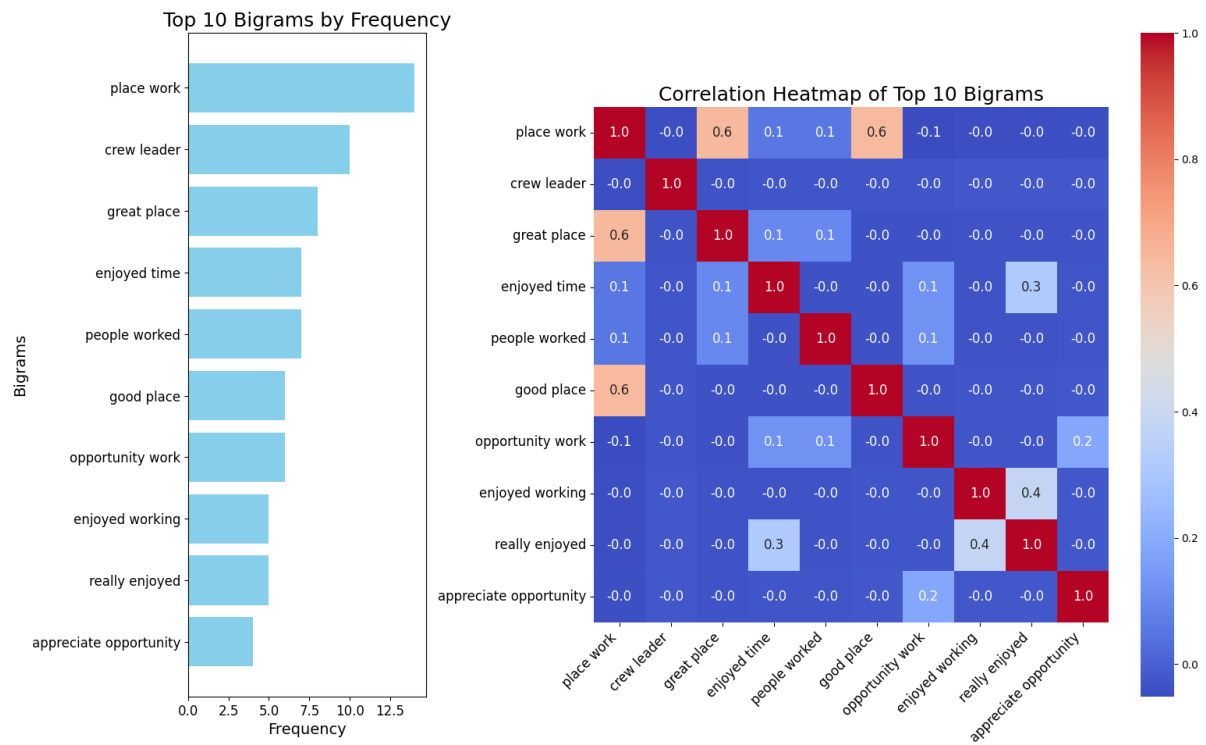
(b) Top 10 Bigrams and Correlation Heatmap



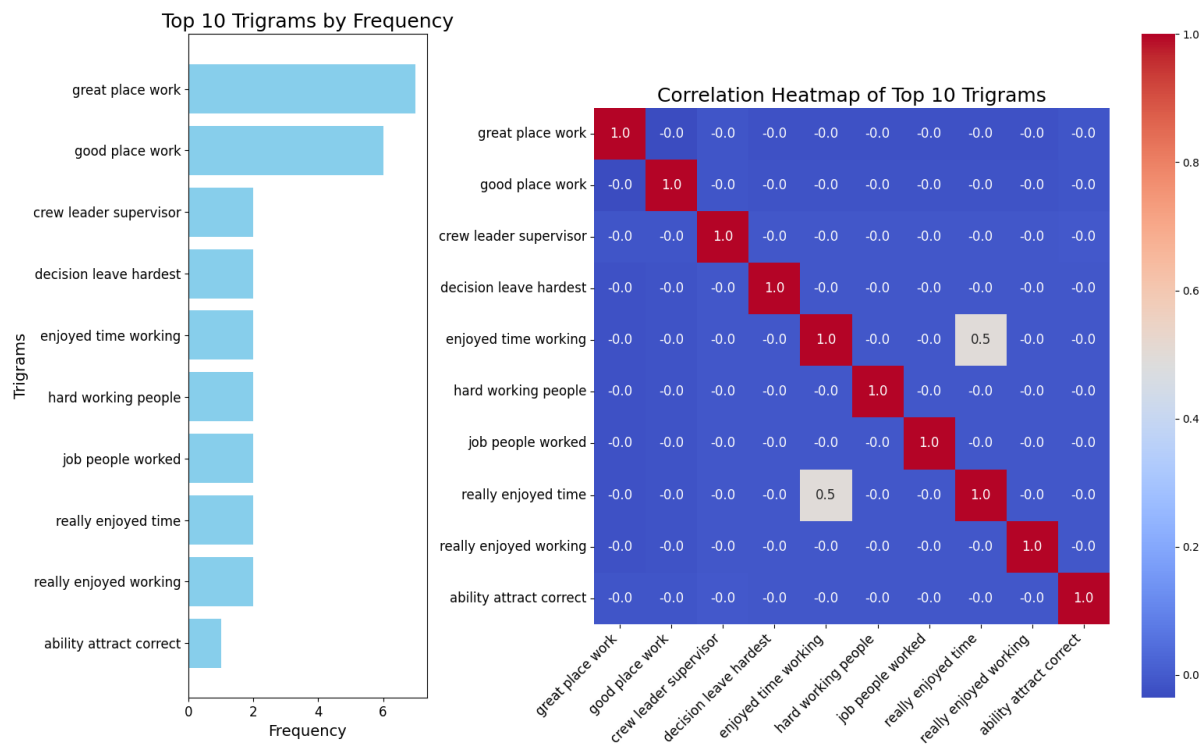
(c) Top 10 Trigrams and Correlation Heatmap
Figure G.4 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 5.



(a) Top 10 Unigrams and Correlation Heatmap

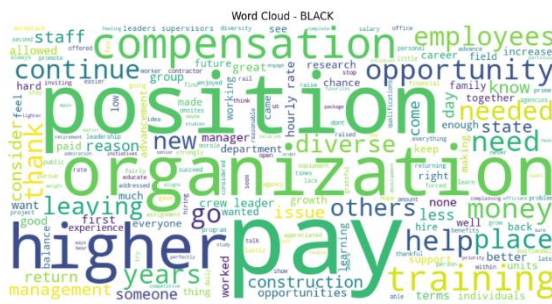


(b) Top 10 Bigrams and Correlation Heatmap



(c) Top 10 Trigrams and Correlation Heatmap
Figure G.5 Top 10 N-Grams and Corresponding Correlation Heatmap for Question 6.

Appendix H. Figures From Section 2.4

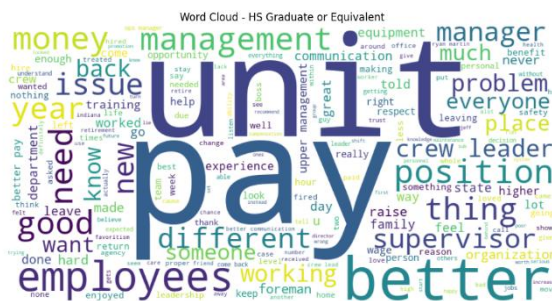


(a) Black



(b) White

Figure H.1 Word Cloud of Responses by Ethnic Group.



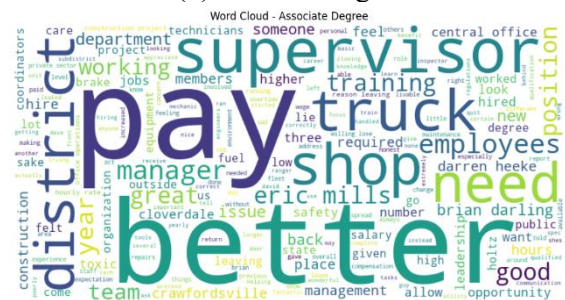
(a) HS Graduate or Equivalent



(b) Some College



(c) Technical School



(d) Associate Degree



(e) Bachelor's Level Degree



(f) Master's Level Degree

Figure H.2 Word Cloud of Responses by High Education Group.

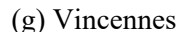
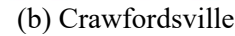


(a) Male



(b) Female

Figure H.3 Word Cloud of Responses by Gender Group.



H-3

Appendix I. INDOT Training Vendors

Vendor Name
AASHTO (0000115208)
ACCREDITED SAFETY SOLUTIONS INC (0000389058)
AMERICAN BAR ASSOCIATION (0000051733)
AMERICAN SAFETY COUNCIL INC (0000215985)
ASPEN AERIALS, INC (0000113968)
ASPHALT PAVEMENT ASSOCIATION OF INDIANA (0000336342)
ASPHALT RECYCLING & RECLAIMING ASSOCIATI (0000422338)
AVIATION ASSOCIATION OF INDIANA INC (0000102148)
BALL STATE UNIVERSITY (0000051259)
BOWLBY & ASSOCIATES, INC (0000117623)
BRIAN SCHLEPPI (0000414013)
ENVIRONMENTAL RESOURCE CENTER (0000054406)
ENVIRONMENTAL TRAINING CONCEPTS (0000389425)
FEDERAL HIGHWAY ADMINISTRATION (0000213034)
GREENMAN PEDERSON INC (0000255434)
ILLUMINATING ENGINEERING SOCIETY (0000320334)
IMSA-INDIANA SECTION (0000103974)
INDIANA CHAMBER OF COMMERCE (0000051514)
INDIANA CHAPTER OF THE AMERICAN CONCRETE (0000191829)
INDIANA CONSTRUCTORS INC (0000211719)
INDIANA MINERAL AGGREGATES ASSOCIATION (0000330263)
INDIANA SCHOOL OF REAL ESTATE LLC (0000338907)
INDIANA SOCIETY PROFESSIONAL LAND (0000092079)
INDIANAPOLIS BAR ASSOCIATION (0000055471)
INDIANAPOLIS METROPOLITAN PLANNING (0000385548)
INSTITUTE OF BOTANICAL (0000090327)
INTERNATIONAL RIGHT OF WAY ASSOCIATION (0000085362)
IVY TECH COMMUNITY COLLEGE OF INDIANA (0000000508)
KELLEY EXECUTIVE EDUCATION FOUNDATION (0000318579)
MICHIGAN STATE UNIV (0000056623)
MIDWEST REGIONAL TURF FOUNDATION (0000069721)
NATIONAL ACADEMY OF SCIENCES (0000056961)
NATIONAL SAFETY COUNCIL (0000054592)
PERFORMANCE TRAINING SOLUTIONS LLC (0000292968)
PRYOR LEARNING SOLUTIONS INC (0000062074)
PTV AMERICA INC (0000314597)
REAL ESTATE CERTIFICATION PROGRAM LLC (0000430251)
THE INSTITUTE OF INTERNAL AUDITORS INC (0000090612)
TJM SERVICES LLC (0000358374)
TRUSTEES OF PURDUE UNIVERSITY (0000000746)

Appendices References

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About the Joint Transportation Research Program (JTRP)

On March 11, 1937, the Indiana Legislature passed an act which authorized the Indiana State Highway Commission to cooperate with and assist Purdue University in developing the best methods of improving and maintaining the highways of the state and the respective counties thereof. That collaborative effort was called the Joint Highway Research Project (JHRP). In 1997 the collaborative venture was renamed as the Joint Transportation Research Program (JTRP) to reflect the state and national efforts to integrate the management and operation of various transportation modes.

The first studies of JHRP were concerned with Test Road No. 1 — evaluation of the weathering characteristics of stabilized materials. After World War II, the JHRP program grew substantially and was regularly producing technical reports. Over 1,600 technical reports are now available, published as part of the JHRP and subsequently JTRP collaborative venture between Purdue University and what is now the Indiana Department of Transportation.

Free online access to all reports is provided through a unique collaboration between JTRP and Purdue Libraries. These are available at docs.lib.purdue.edu/jtrp/.

Further information about JTRP and its current research program is available at engineering.purdue.edu/JTRP.

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