



Manufacturing Workforce Survey Results

November 2012



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Introduction

■ Purpose

- The Columbia-Willamette Workforce Collaborative is looking to better understand the local manufacturing organizations to guide the future investments and projects targeting the manufacturing industry.

■ Objectives addressed in the survey were designed to:

- Understand manufacturing trends
- Measure the impact of future workforce needs
- Determine demand for and ease of finding workers in different manufacturing occupational groups
- Understand the skills gaps in the current workforce
- Assess workforce competitiveness, outsourcing, generational perceptions
- Learn about perspective differences by company size, respondent title, and type of manufacturing

Methodology & Notations

- Surveys were completed by 158 representatives from the manufacturing workforce in the Columbia Willamette Regional Workforce Collaborative area (Washington, Multnomah, Clackamas, Clark, Cowlitz, and Wahkiakum Counties).

- Gilmore Research Group provided SWWDC with a link to the website which SWWDC then emailed to the target audience, inviting them to participate in the study.
 - All surveys were completed online between October 15th and November 12, 2012.

- Analyst Notations
 - Statistically significant differences are reported at the 95% confidence level, and all differences noted among subgroups are significant differences.
 - Percentages in charts and tables may not sum to 100% due to rounding.
 - Results should be interpreted with caution when base sizes (n-sizes) drop below 30 cases.

Key Findings

Key Findings – Manufacturing Trends

■ Manufacturing trends:

- Organizations appear to be facing two major challenges:
 - ◆ Keeping up with efficient manufacturing processes
 - ◆ Hiring and retaining employees

■ Facing the processes challenge:

- In order to face the changing climate of manufacturing processes, organizations are focusing on keeping work in-house by making the process lean, re-designing the process, or by automating production. Associated with these changes are training to bring employees up to speed with the new machines and lean processes.

■ Facing the available workforce challenge:

- Skilled production workers appear to be the most difficult to hire and retain.
 - ◆ Nearly two-thirds of organizations are impacted by skilled employees leaving the workforce, either through retirement or termination. The majority of those employees will be replaced with either internal or external hires, but others who are not planning on replacing their employees will focus on productivity improvements to eliminate the position.

Key Findings – Future Workforce Needs

- Manufacturing organizations have a need for more, qualified workers as most have experienced a shortage of available candidates in the past. This shortage is often dealt with by using focused recruitment, hiring less-qualified individuals, or by re-training the current workforce.
 - Over the next three years skilled production is predicted to be in highest demand.
 - ◆ The current skilled production workforce shows evident gaps in many skills, with the largest gaps in communication and problem solving abilities.

- How can this shortage be addressed?
 - Certifying candidates with skill level certificates is somewhat valuable for all skills, but organizations prefer work experience over a skill certificate.
 - Roughly one-quarter of organizations offer informal apprenticeship programs on site, but half do not participate in apprenticeship programs.
 - Internships are used by over half of companies; the larger organizations are more likely to engage in internships than the smaller companies. The majority of internships are set up through university or community college campuses.

Key Findings – Skill Gaps in Current Workforce

- Results show gaps evident in all levels of the current manufacturing workforce.
 - All workers could benefit from training in soft skills – to better communicate and work with team members.
 - More leadership and supervisory training would benefit managers/supervisors as well as skilled production.
 - The following gaps are more prominent among skilled and unskilled production than managers/supervisors or engineering roles:
 - ◆ Problem solving
 - ◆ Foundational skills
 - ◆ Computer knowledge and basic technology
 - ◆ Cultural competency
 - ◆ Competency across generations

Key Findings – State of the Industry

■ Productivity:

- In order to improve productivity and processes, the majority of companies have tried to become more efficient. Roughly one-quarter have started outsourcing some tasks in the past three years. However, at the same time, just under a quarter have also brought processes back *in-house* in the last three years in an effort to improve productivity and quality.
- Few organizations have their manufacturing processes outside of Washington or Oregon, and only one interviewed is considering relocating due to lack of a talented workforce.

■ Generational Gaps:

- While generational gaps are present in the workforce, manufacturers perceive younger workers as tending to have good attitudes and being more open to change. Most companies have good communication among the generations, but two out of five are experiencing a generational gap in culture that is affecting the ability to recruit, hire, and retain new workers.
 - ◆ Manufacturers perceive younger workers as being heavily motivated to work for the money rather than the opportunity to build their careers or the specific benefits offered by the organization.

Detailed Findings



Types of Manufacturing Represented in Survey

- The sample reflects a variety of manufacturers.
 - Just under half work with primary metals (44%).
 - Clark and Multnomah Counties are represented more than any others.
 - Companies vary in size, with over half having more than 100 employees (55%).
 - Different levels of employees were interviewed from executives (owners, presidents, CEOs, CFOs, etc.) to Human Resource managers and trainers.

Types of Manufacturing	
	(158)
Primary Metals	44%
Fabricated metal products	18%
Machinery	10%
Transportation equipment	8%
Primary Metals	4%
Primary – Other	4%
Electrical	17%
Computer and electronic products	11%
Electrical equipment, appliance, and component	4%
Electrical – other	2%
Other	37%
Work with manufacturers	10%
Paper	5%
Food	4%
Plastics and rubber products	3%
Nonmetallic mineral products	1%
Wood product	1%
Chemical	1%
Miscellaneous	6%
Other	7%

Profile	
	(158)
County	
Clark	35%
Multnomah	32%
Clackamas	13%
Washington	10%
Cowlitz	6%
Wahkiakum	1%
Title	
Executives	29%
VP/Director/Manager	23%
HR/Training	38%
Controller	1%
Other	6%
Size of Workforce	
Small (<30)	15%
Mid-size (30-99)	25%
Mid-large (100-499)	37%
Large (500+)	18%

- Q1. Which one of the following types of manufacturing best describes your company's primary function?
- Q4. Approximately how many workers does your company employ in the six-county area?
- Q5. In which county do most of your employees work?
- Q6. What is your job title or role?

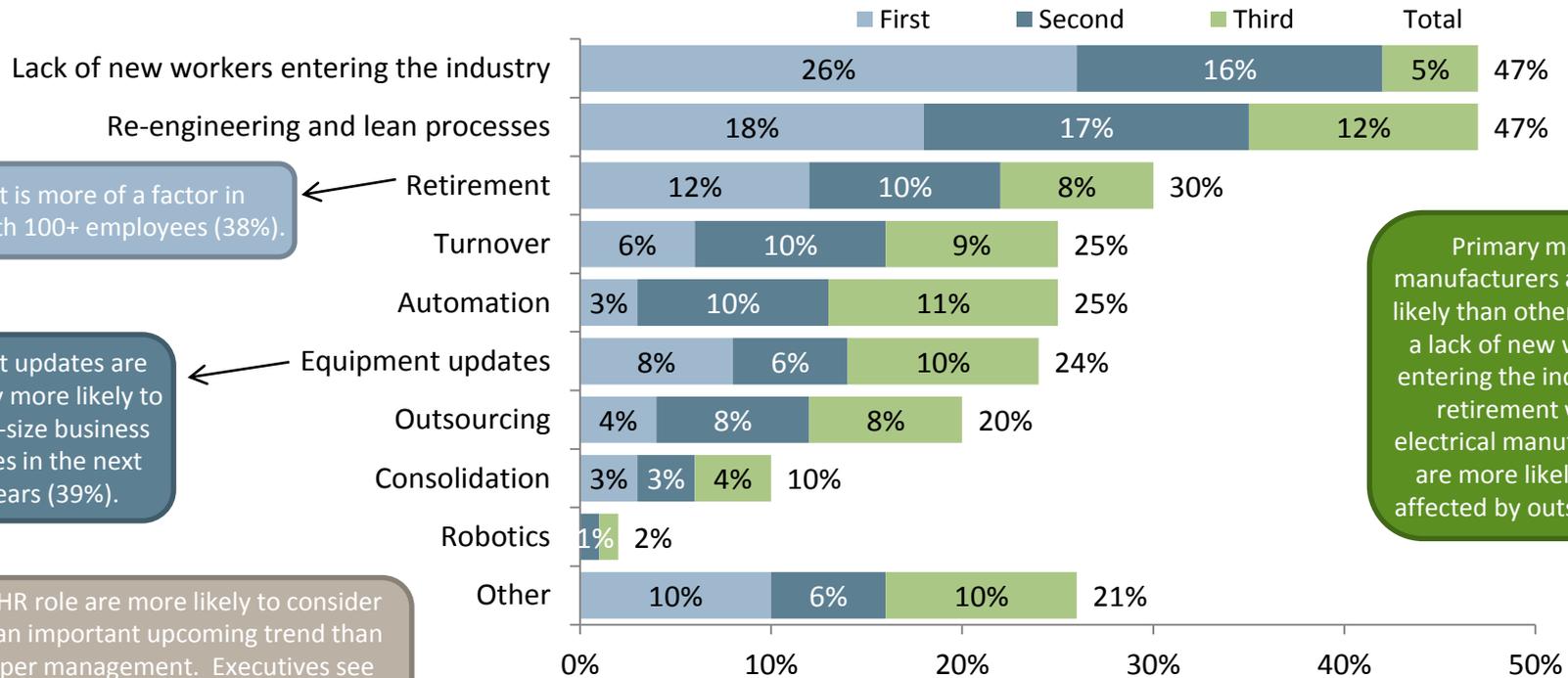


Current Workforce Climate

Anticipated Workforce Trends or Changes

- Both the lack of new workers entering the industry and the re-engineering and lean processes are major trends facing manufacturing firms in the next three years.

Important Trends or Changes to Workforce in Next 3 Years



Retirement is more of a factor in companies with 100+ employees (38%).

Equipment updates are significantly more likely to affect mid-size business workforces in the next three years (39%).

Staff in the HR role are more likely to consider retirement an important upcoming trend than those in upper management. Executives see outsourcing as a bigger trend than those in other positions at manufacturing firms.

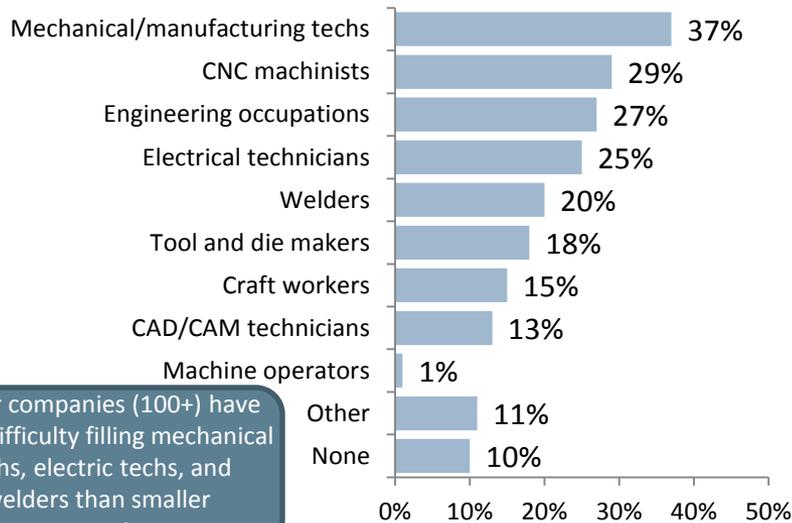
Primary metal manufacturers are more likely than others to face a lack of new workers entering the industry or retirement while electrical manufacturers are more likely to be affected by outsourcing.



Difficulty in Filling Positions

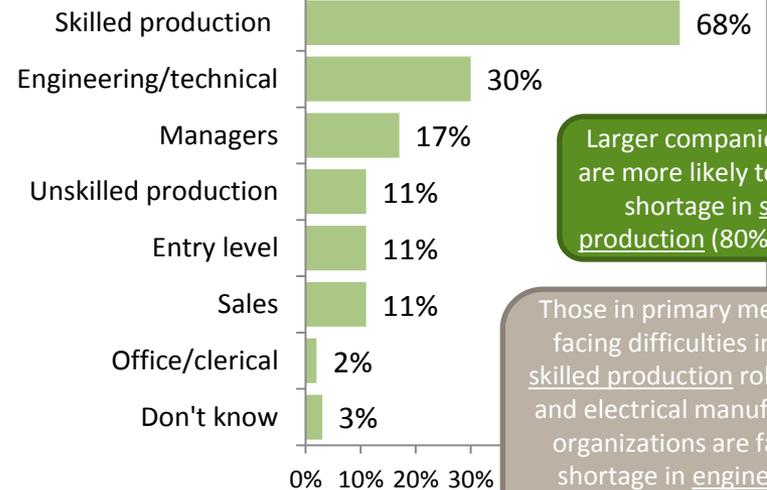
- Organizations are currently having the most difficulty filling mechanical or manufacturing tech positions or CNC machinists.
 - Primary metal manufacturers are having a hard time filling CNC machinists (49%), mechanical/machinists (39%), welders (33%), and tool and die makers (29%).
 - Electrical manufacturers have the hardest time filling engineering occupations (52%).
- In the future, organizations anticipate skilled production positions to be the most difficult to fill.

Currently Most Difficult Positions to Fill



Larger companies (100+) have more difficulty filling mechanical techs, electric techs, and welders than smaller companies.

Anticipated as Most Difficult Position to Find Qualified Employees in next 3 years



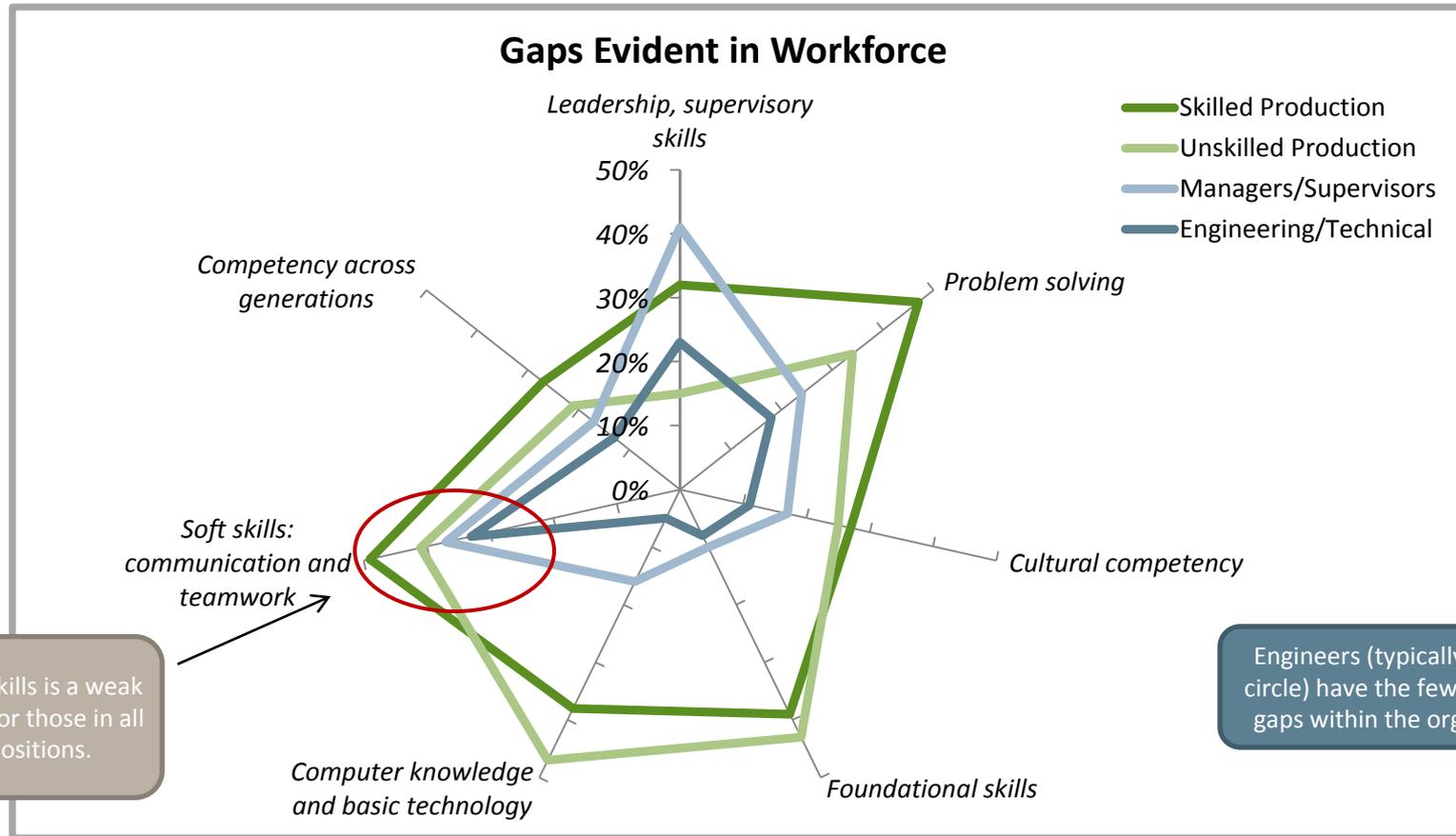
Larger companies (100+) are more likely to face the shortage in skilled production (80% vs. 54%).

Those in primary metals are facing difficulties in filling skilled production roles (84%) and electrical manufacturing organizations are facing a shortage in engineering/technical levels (67%).



Gaps Among Different Workforce Positions

- When comparing the different positions, gaps are more evident among skilled and unskilled production (typically making up the outer circle below) than among managers/supervisors or engineering/technical positions.



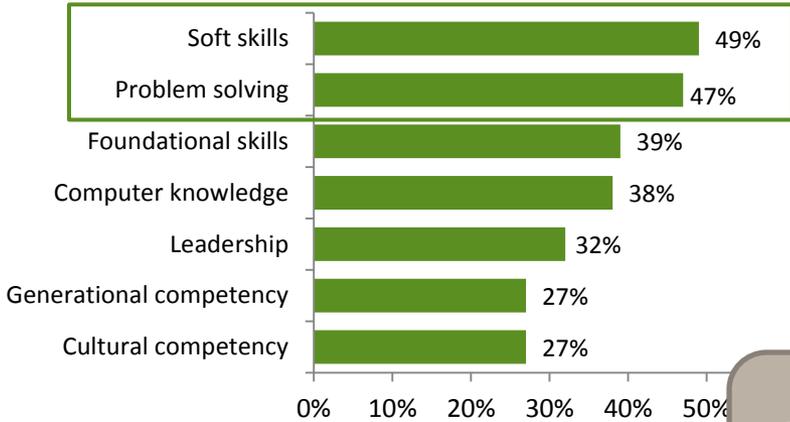
Soft skills is a weak spot for those in all positions.

Engineers (typically the inner circle) have the fewest evident gaps within the organization.

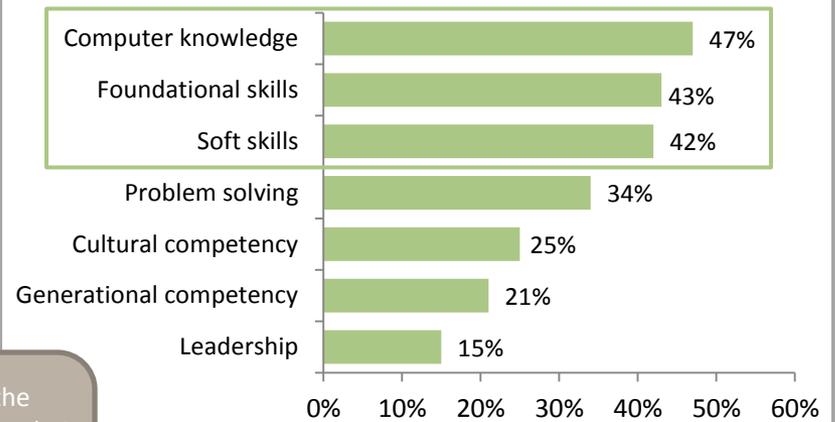


Gaps Among the Different Workforces

Gaps Among Skilled Production

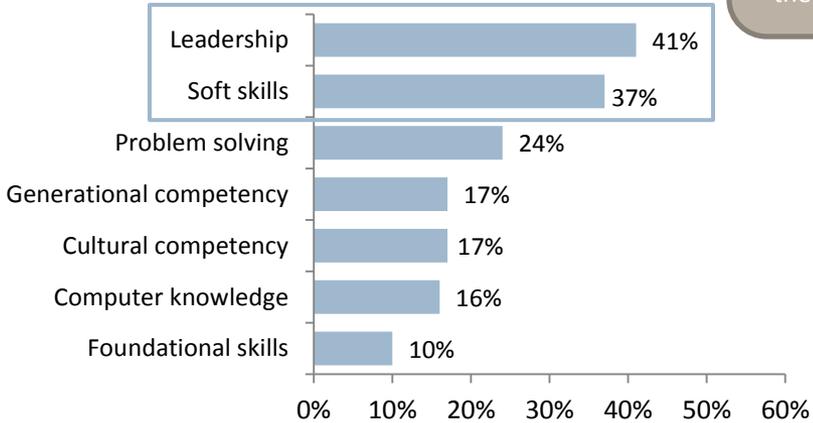


Gaps Among Unskilled Production

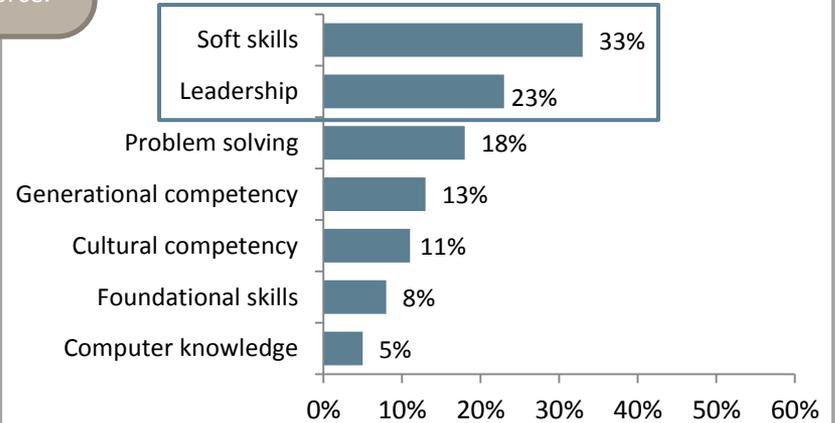


Each of the positions have their own strengths and evident gaps within the workforce.

Gaps Among Managers/Supervisors



Gaps Among Engineering/Technical

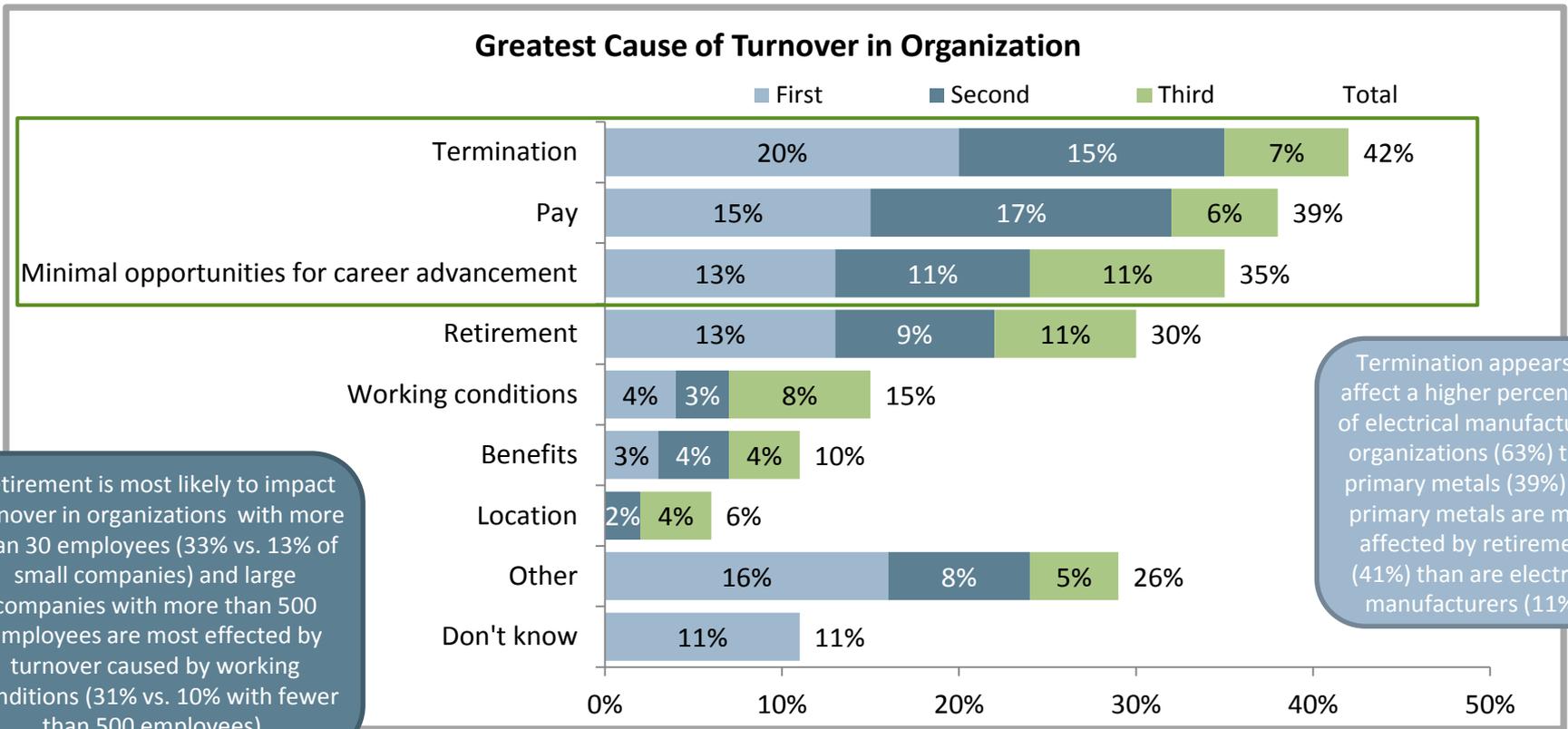


Additional Findings Regarding Gaps in the Workforce

- Smaller companies are less likely than larger companies to see gaps in problem solving, cultural competency, foundational skills, and computer knowledge among unskilled production.
- Executives are more likely to see gaps in skilled production's foundational skills than those in HR or training roles.
- Gaps in leadership skills are noted more often in electrical engineering for both managers/supervisors and engineering/technical roles than in primary metals manufacturing organizations.

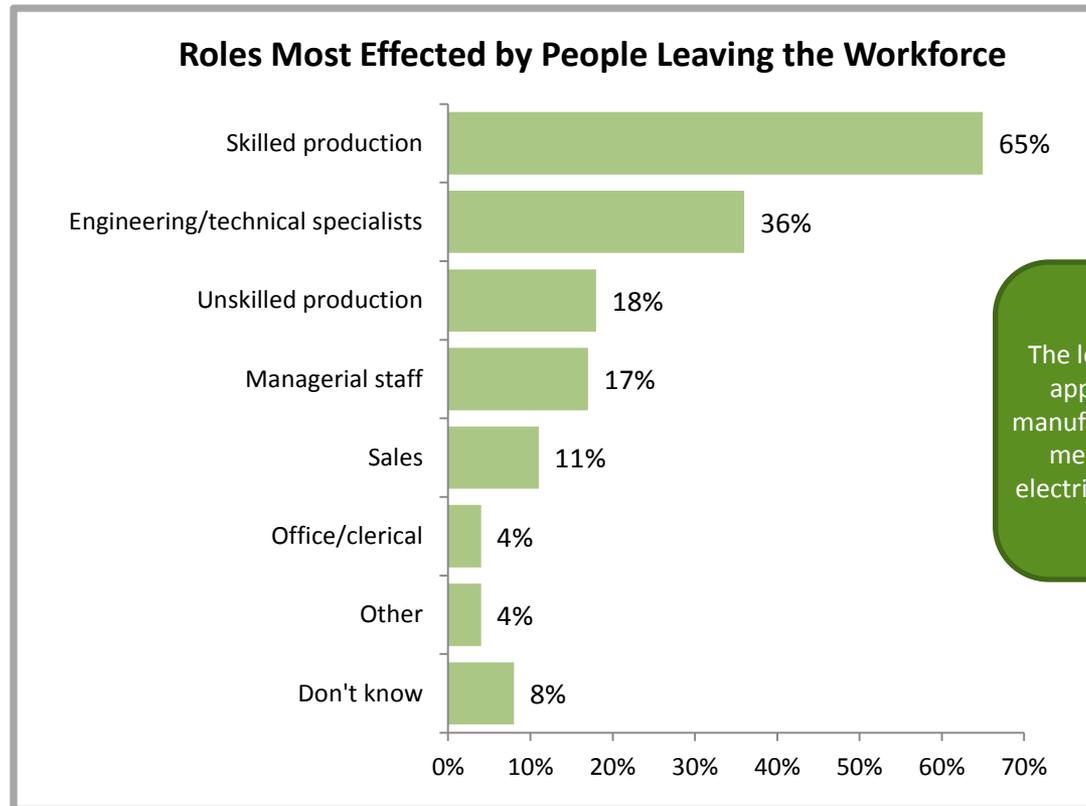
Turnover at the Organization

- Four out of ten organizations rate termination as one of the greatest causes of turnover in the organization (42%). Pay and minimal opportunities for career advancement are also in the top three causes for people leaving.



Roles Affected by Employees Leaving Workforce

- Skilled production appears to be most affected by employees leaving the workforce in the current climate (65%), followed by engineering or technical specialists (36%).



The loss of skilled production appears to hit all types of manufacturing, but hits primary metals harder (78%) than electrical manufacturers (52%).

Response to Employees Leaving the Workforce

- When the engineering or tech specialists positions come open, 95% of firms plan to fill those vacant spots using mostly new hires.
- The unskilled production is least likely to be replaced and organizations are planning to improve productivity and automation to compensate for the shrinking workforce.

Type of Position	n-size	% Planning to Fill Vacant Position	Plans to address shrinking workforce	Plans for replacements (Top 2)	
Engineering or technical specialists	(57)	95%	None	Mostly new hires (52%)	Equally internal and external candidates (39%)
Sales personnel	(18)	89%	None	Mostly new hires (56%)	Equally internal and external candidates (38%)
Managerial staff	(26)	89%	None	Equally internal and external candidates (48%)	Mostly new hires (35%)
Other workers	(7)	86%	Decreased demand	Mostly from internal positions (33%)	Equal (33%), Mostly new hires (33%)
Skilled production	(103)	85%	Productivity improvements	Equally internal and external candidates (52%)	Mostly new hires (23%)
Office or clerical	(7)	71%	None	Mostly new hires (60%)	Equally internal and external candidates (20%)
Unskilled production	(28)	68%	Productivity improvements, automation, decreased demand	Mostly new hires (58%)	Equally internal and external candidates (32%)

Asked of those who mentioned roles are being affected by employees leaving the workforce (Q25)

Q2601-Q2607. When current <type> workers retire, does your company plan to fill the vacant position? (n=158)

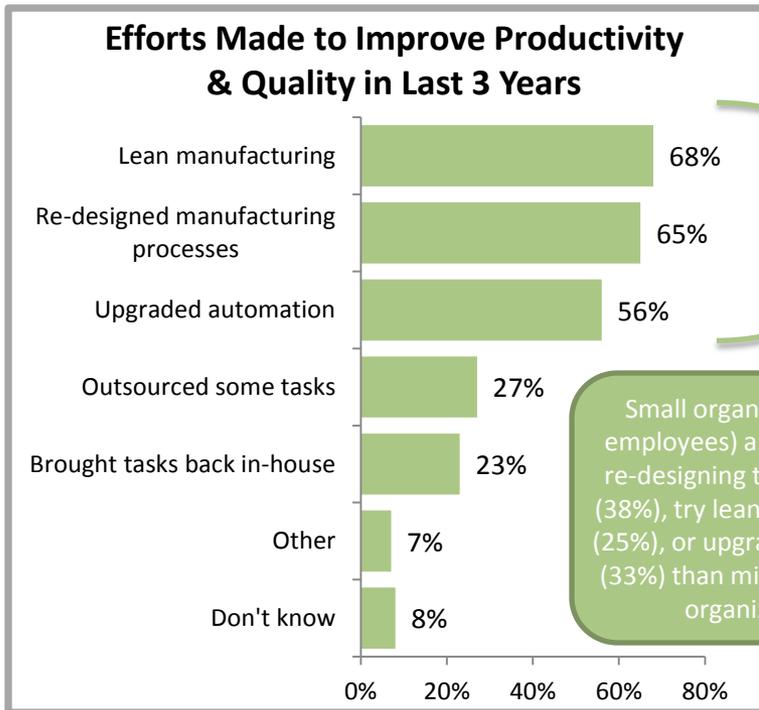
Q2701-Q2707. How will you address your shrinking <type> workforce? Check all that apply. listed in order of mention

Q2701-Q2807. Do you expect the replacements for <type> workers to come from internal promotions or from new hires? (ns vary)

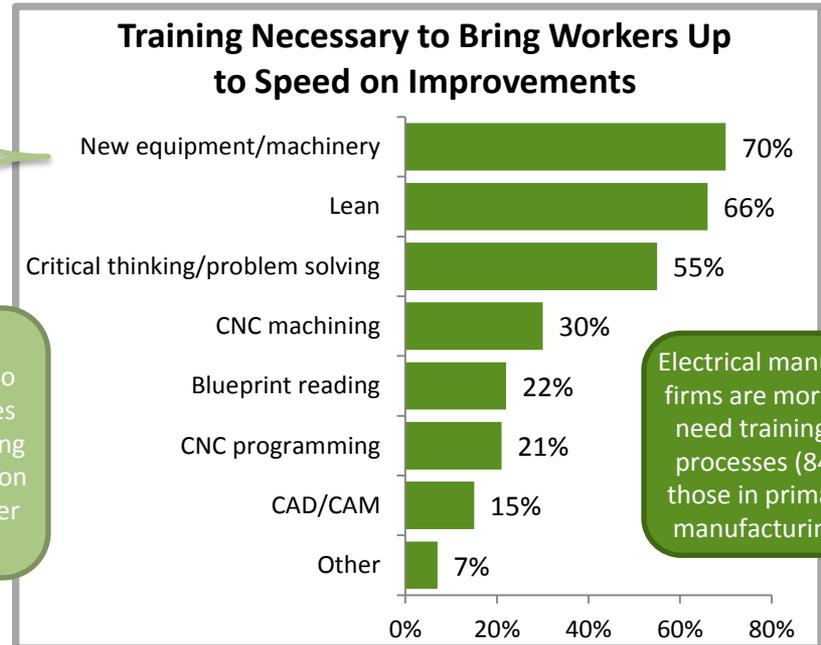
Manufacturing Process Adjustments

Steps to Improve Productivity and/or Quality

- In the last three years, manufacturing organizations have focused more on lean manufacturing (68%) and re-designing the manufacturing process (65%) to improve productivity than any other effort.
 - In order to bring workers up to speed on improvements, many organizations offered training on new equipment/machinery (70%), lean processes (66%), and critical thinking/problem solving (55%).



Small organizations (<30 employees) are less likely to re-designing their processes (38%), try lean manufacturing (25%), or upgrade automation (33%) than mid-size or larger organizations.



Electrical manufacturing firms are more likely to need training on lean processes (84%) than those in primary metal manufacturing (65%).



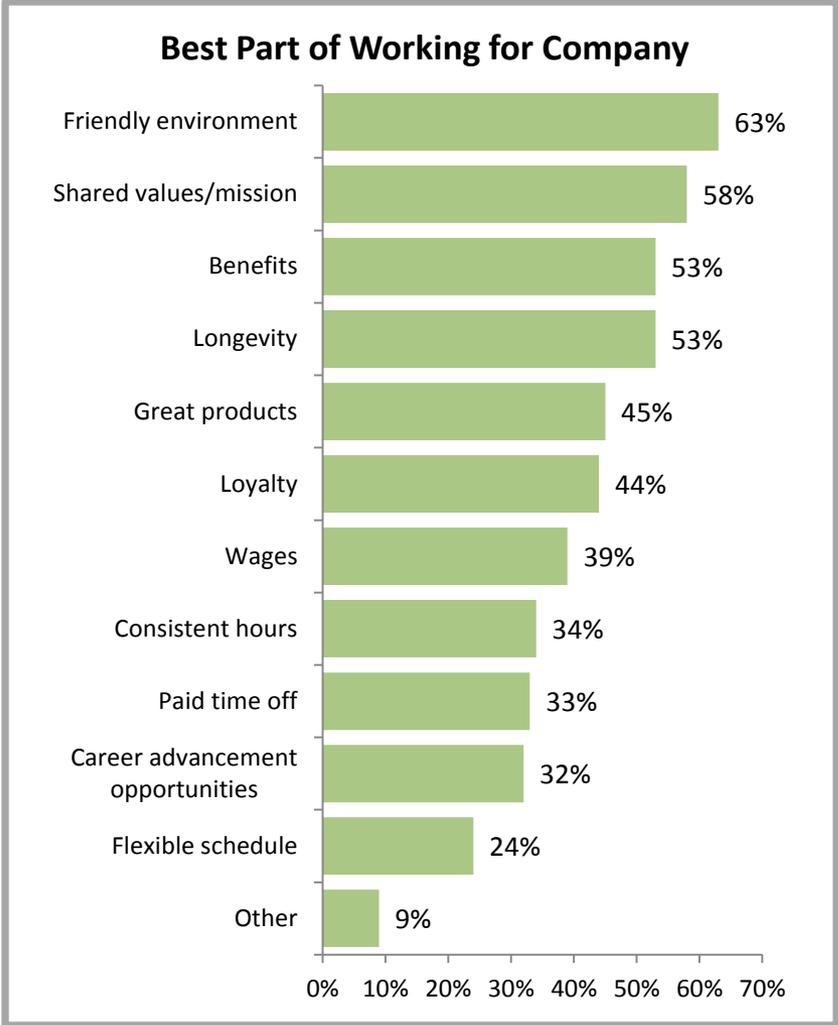
Positive Aspects of Manufacturing Organization

- The majority of respondents appreciate the friendly environment (63%), shared values (58%), benefits (53%), and longevity (53%) at their manufacturing organization.

Employees working for larger companies are more likely than those working for small companies (less than 30 employees) to value their organization's:

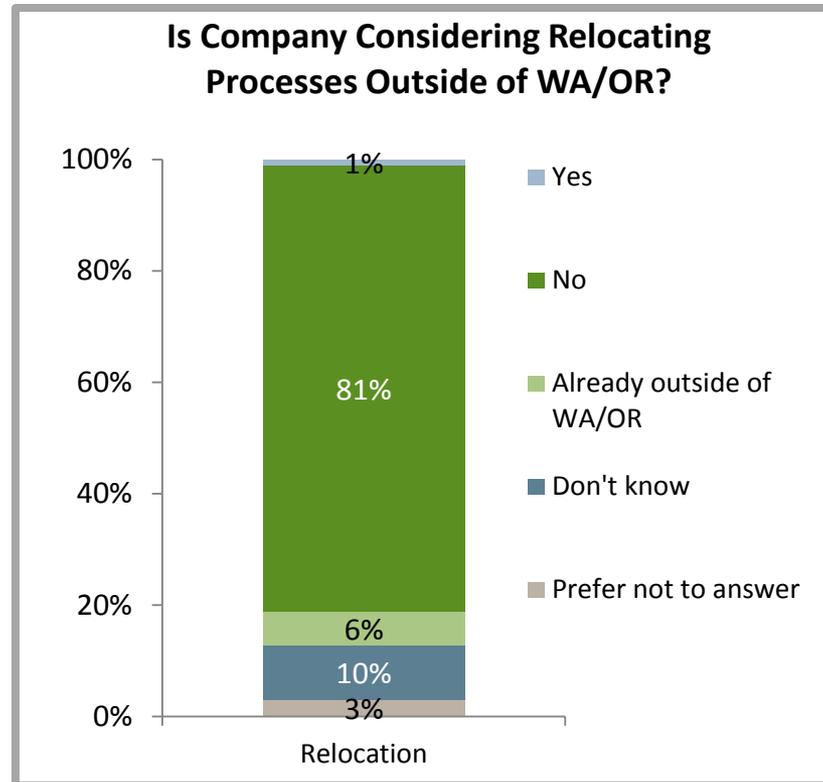
- Friendly environment
- Benefits
- Longevity
- Wages
- Paid time off

Primary metal manufacturer employees are more likely to value the benefits and longevity of their organization than those working for electrical manufacturers.



Considering Relocation Due to Lack of Talent

- Only one organization interviewed is considering moving their manufacturing processes outside of the Washington/Oregon area based on a lack of talent or skills, but 6% already have their processes outside of this area and 10% don't know if relocation is being considered or not.

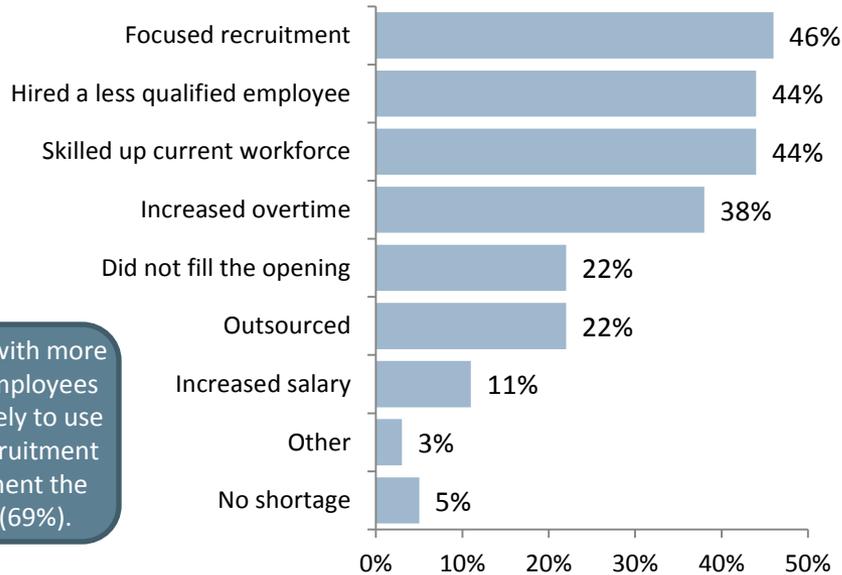


Bringing Workers Into the Workforce

Addressing the Shortage in the Workplace

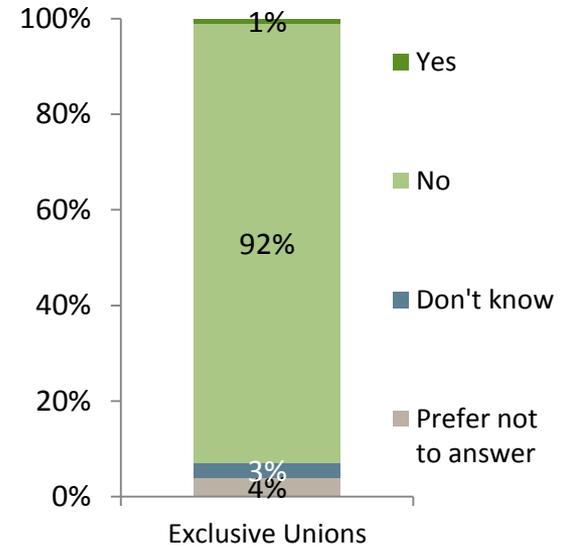
- In the past, manufacturing organizations have used focused recruitment, less qualified employees, or skilled up the current workforce to address a shortage in qualified workers.
- The majority of organizations interviewed do not hire exclusively from external unions (92% do not).

How Shortage in Qualified Workforce was Addressed



Companies with more than 500 employees are most likely to use focused recruitment to supplement the shortage (69%).

Hire Exclusively from External Unions



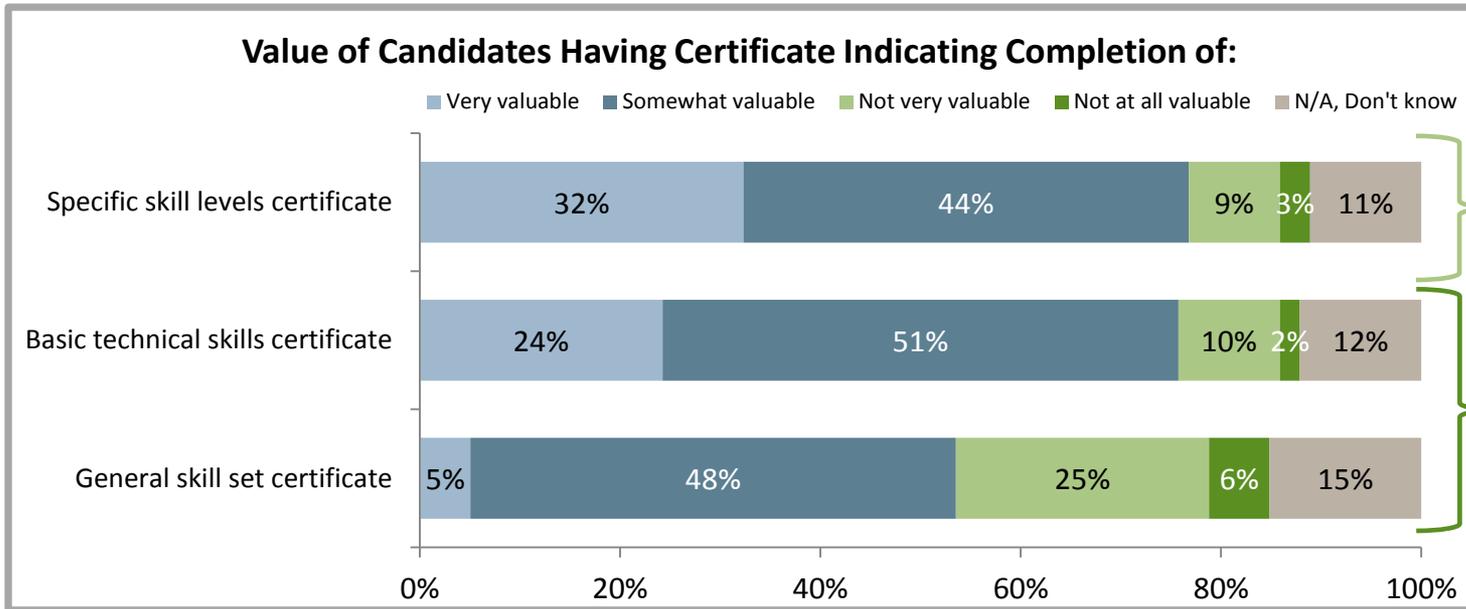
Q12. In the past, if your organization experienced a shortage in qualified workers, how did it address the shortage? (n=158)

Q13. Some companies rely in part on continuing education and certification when hiring or promoting employees. Thinking about hiring, do you hire exclusively from external unions? (n=158)



Value of Skills Certificates

- Specific skill level certificates are considered the most valuable of the three types of certificates mentioned and are at least somewhat valuable for 76% of manufacturing organizations interviewed.
- Mid-size organizations with more than 30 and less than 500 employees are more likely to find value in each of the skills certificates than small or large organizations .



Why not?
Organizations would prefer more actual work experience.

Why not?
Employers prefer to train internally or local programs don't offer sufficient value.

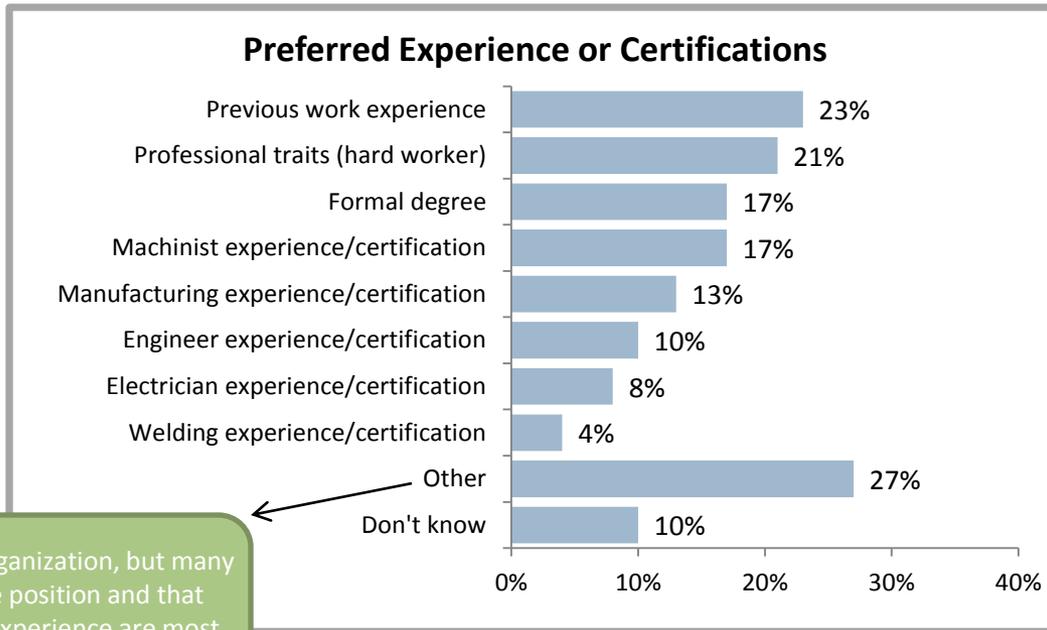
Organizations that take advantage of apprenticeships and internships are more likely to find value in the certificate for specific skill levels.

Q14. When evaluating a candidate for promotion or hire, how valuable is a certificate that indicates a general skill set? (n=158)
 Q16. How valuable is a certificate that indicates completion of basic technical skills? (n=158)
 Q18. How valuable is a certificate that indicates completion of specific skill levels? (n=158)
 Q15, Q17, & Q19. Why is that – follow-up to previous question if “not very” or “not at all” valuable.



Preferred Experience and Certifications

- When looking for candidates to hire or promote in positions that are difficult to fill, organizations are most likely to be looking for those with previous work experience or professional traits that prove applicants to be hard workers.
 - Of the particular trade skill certificates, machinist and manufacturing certificates are in highest demand.



Large companies (500 or more employees) are more likely to look for previous work experience (38%) than small companies with less than 30 employees (17%).

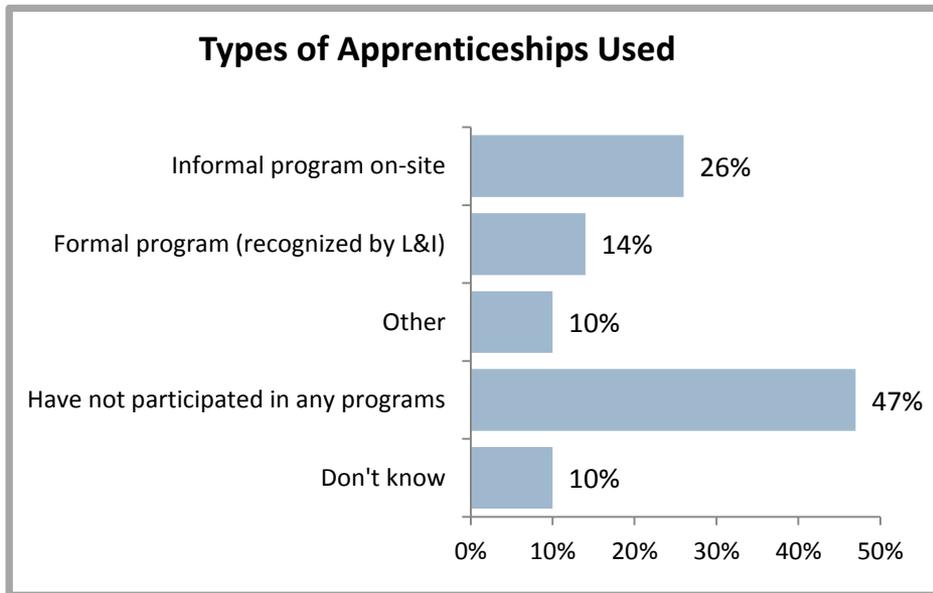
Primary metal manufacturers are more likely to look for those with *machinists* and electrical manufacturers are more likely to look for those with *electrician experience or certifications or formal degrees*.

“Others” varied by organization, but many said it varies by the position and that technical skills and experience are most valuable when evaluating candidates.



Use of Apprenticeships

- Just under half of organizations interviewed have participated in some kind of internship program, primarily using an informal program on-site (26%) though some have used a formal program that is recognized by L&I (14%).
 - Those who offer informal apprenticeships were asked why they hadn't formalized their programs through L&I. For some organizations, the L&I program was too time-intensive (21%), too costly (18%), or they did not know how to formalize the program through L&I (12%).



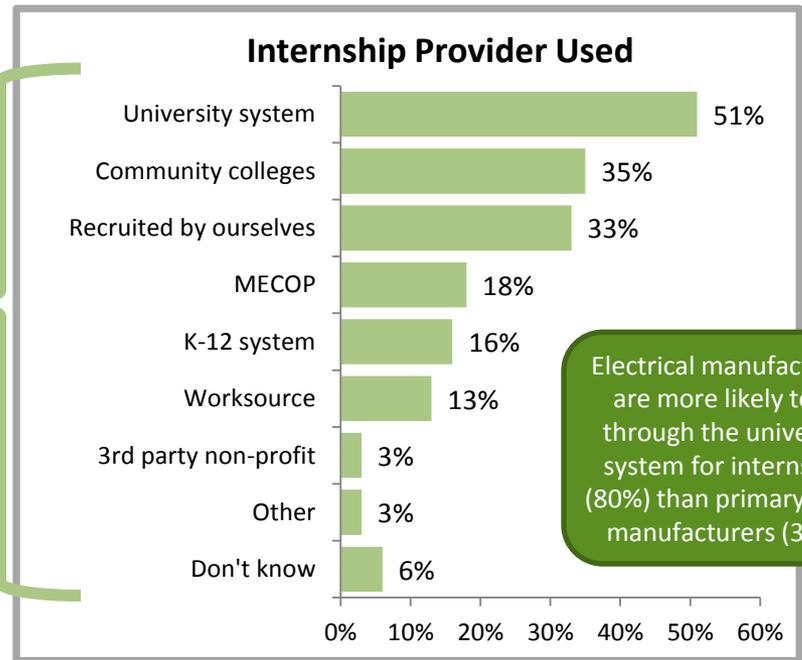
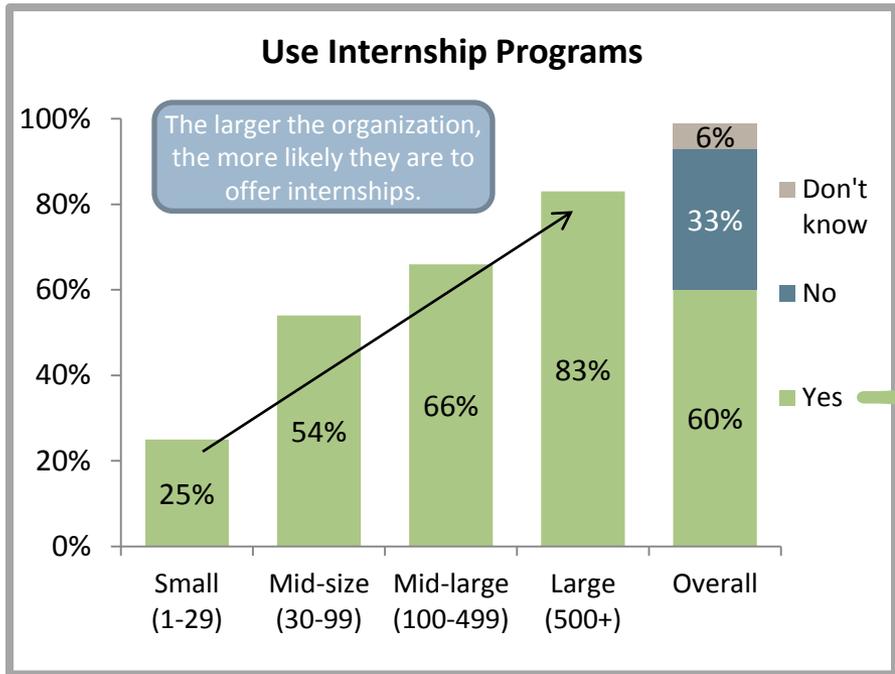
Large companies with 500 or more employees are more likely to use a formal apprenticeship program (45%) than smaller companies (7%).

Primary metal manufacturers are more likely to use formal apprenticeships (22%) than electrical manufacturers (4%).



Internships

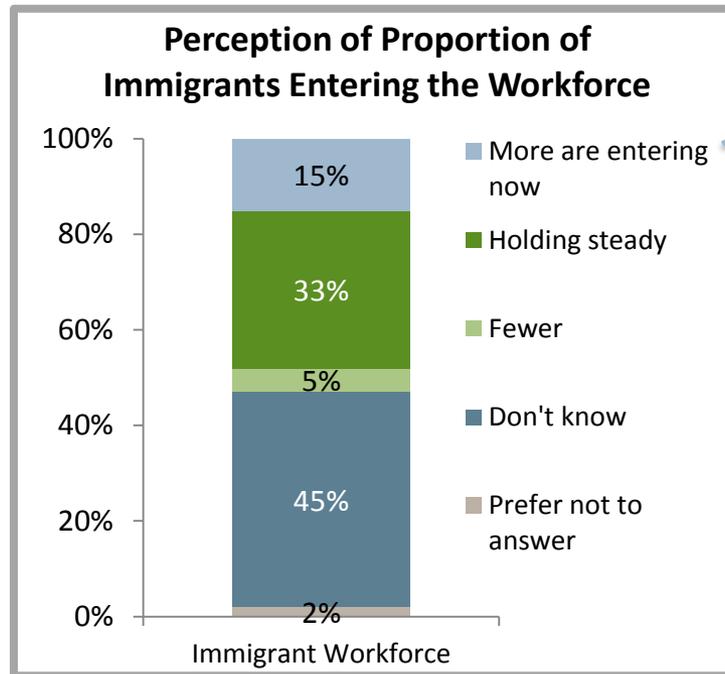
- Six out of ten manufacturing organizations have participated in internship programs in the past (60%).
 - Half of those internships are run through a university system (51%) or community college (35%).
 - One-third are recruited by the manufacturing company (33%).



Immigrant Workforce

- While half of companies interviewed are not aware of the percent of their workforce made up by immigrant labor (53%), the average among those who are aware of their immigrant labor percentage is 23%.
- One-third of organizations see the proportion of immigrants entering the workforce as holding steady (33%), 15% feel more are entering now, and nearly half simply “don’t know” (45%).

Percent of Workforce Comprised of Immigrant Labor	
1-10%	19%
11-25%	5%
26-50%	12%
51-100%	3%
Don't know	53%
Prefer not to answer	8%
<i>Mean</i>	23%



Why do you think more immigrants are entering the workforce?

“Assembly work is lower paying jobs and the immigrants are willing to work for less money.”

“The numbers of immigrants is growing.”

“They are more willing to work in “older” industries.”

“Easy to apply to those types of positions.”

Q40. Approximately what proportion of your workforce is comprised of immigrant labor? (n=117)

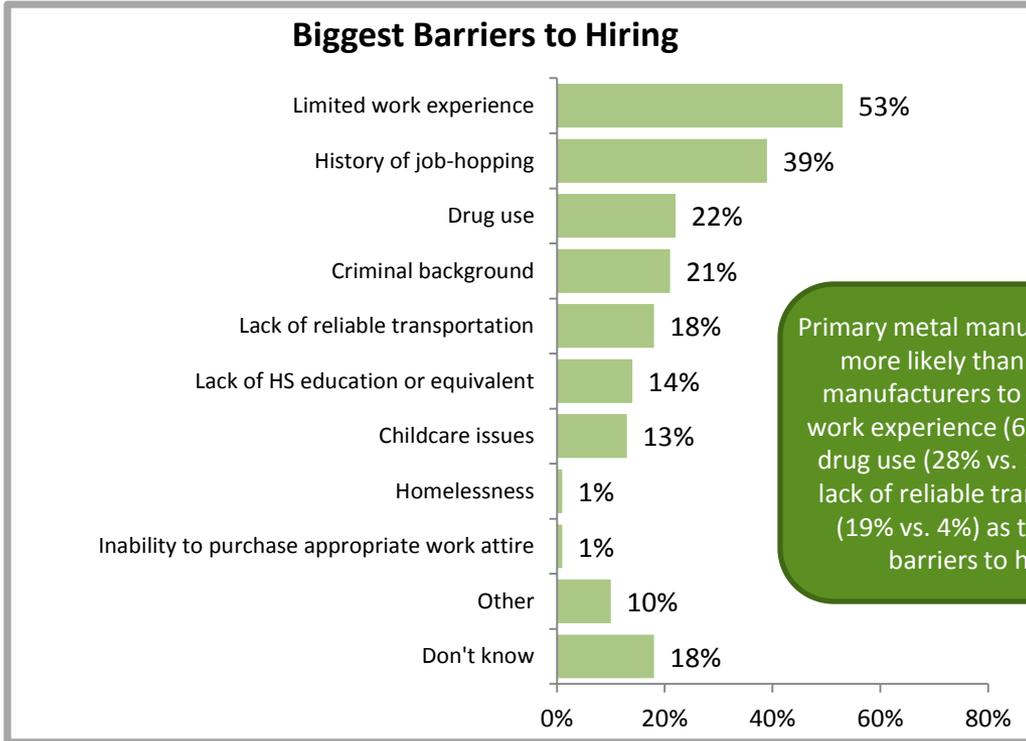
Q41. Based on your experience, would you say that the proportion of immigrants entering the workforce in your industry is increasing, remaining the same, or decreasing? (n=158)

Q42. Why do you think more immigrants are entering the manufacturing workforce? (n=24)



Barriers to Hiring

- Over half of manufacturing organizations list limited work experience as the biggest barrier to hiring (53%). Next to limited work experience, having a history of job-hopping is the next largest barrier to hiring (39%).
- Less than one out of ten applicants are typically turned away due to failing a drug screening or background check.



Primary metal manufacturers are more likely than electrical manufacturers to see limited work experience (64% vs. 41%), drug use (28% vs. 11%), and a lack of reliable transportation (19% vs. 4%) as the largest barriers to hiring.

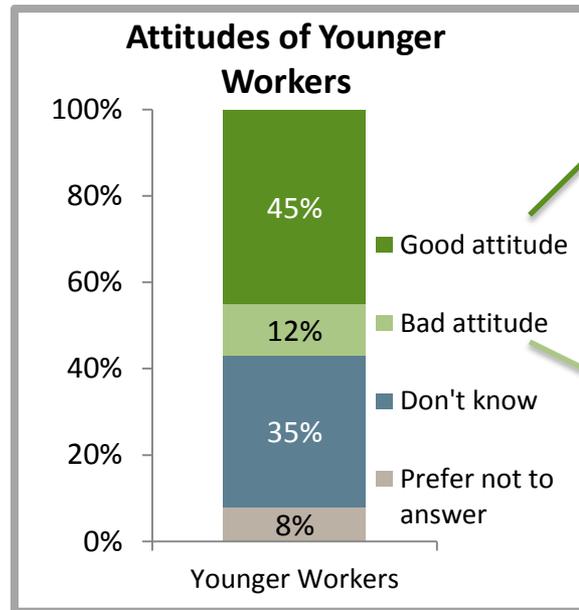
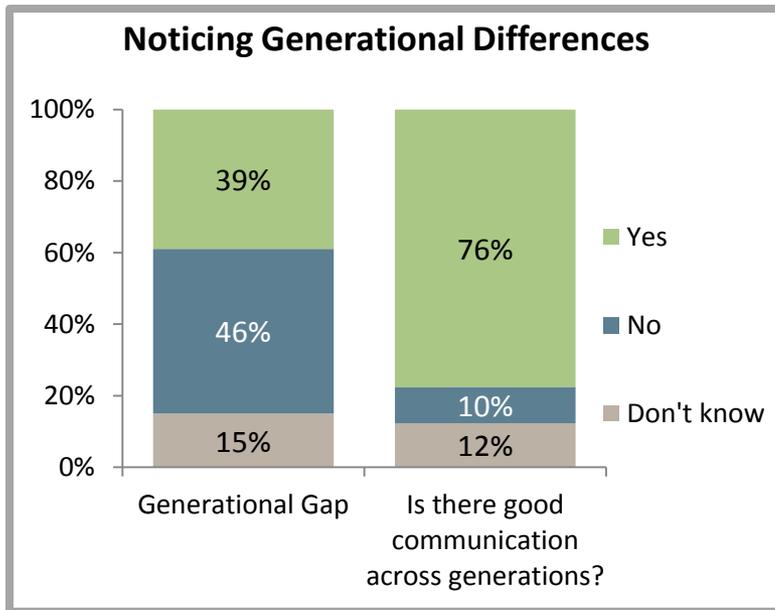
Percent of Applicants Facing No-Hire Due to Failing:		
	Drug Screen	Background Check
1-5%	21%	16%
6-10%	7%	7%
11% or more	15%	10%
Don't know	50%	59%
Prefer not to answer	7%	8%



Generational Differences

Generational Differences

- Roughly four out of ten organizations have noticed a generational gap related to attitudes and workplace culture between workers that affects the ability to hire new workers (39%). However, more than three out of four organizations feel that communication is good among the different generations at their company (76%).
- While many weren't able to answer for the attitudes of younger workers, 45% feel young workers have good attitudes compared to older workers and only 12% have bad attitudes.



“They seem eager and willing to adapt to change.”
 “They have a willingness to learn.”
 “Not set in ways, willing to try new things.”

“Sense of entitlement, want more for less.”
 “There seems to be a lack of work ethic in the younger generation.”

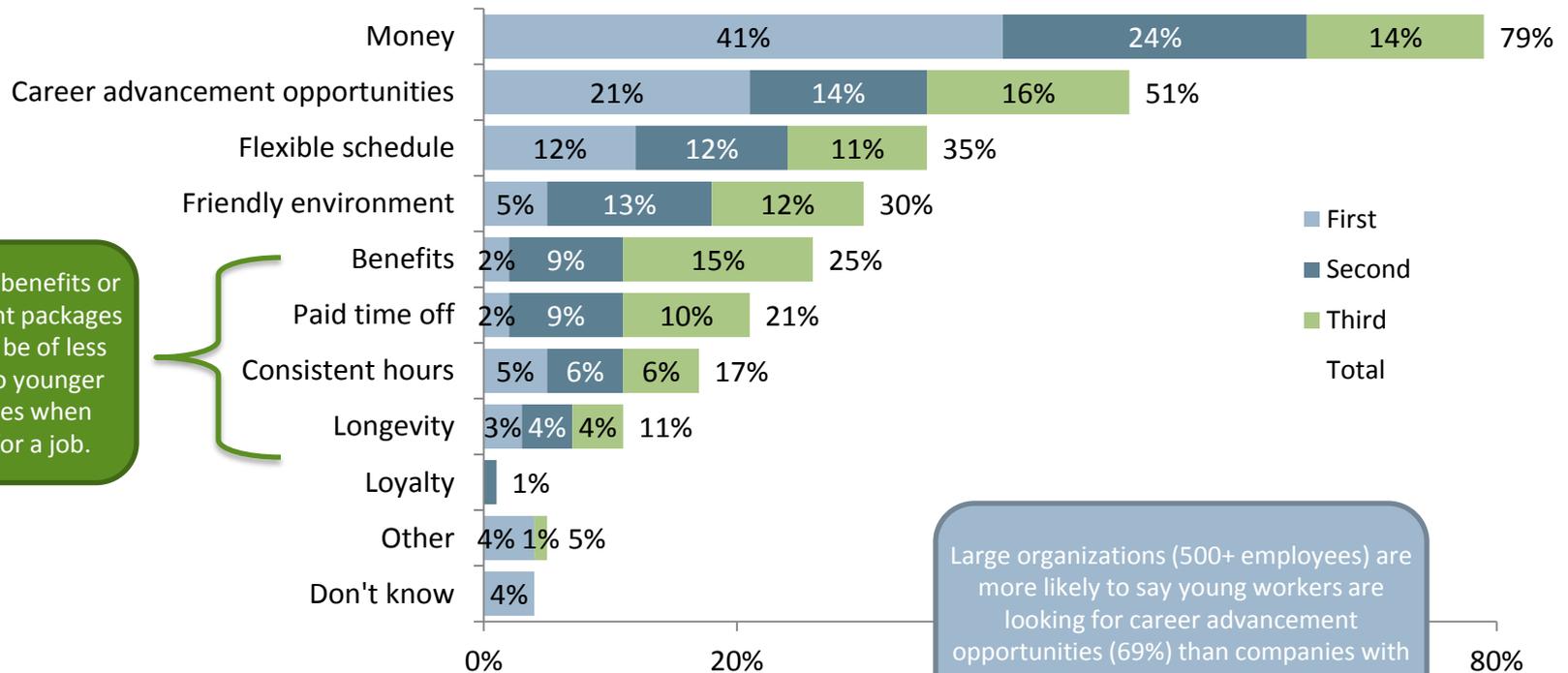
- Q34. Have you observed a generational gap related to attitudes about workplace culture that affects your company's ability to recruit, hire, and retain new workers? (n=158)
- Q36. Compared to older workers, which best describes the attitudes of your younger employees? (n=158)
- Q37. Why do you say that? (n=90)
- Q38. Do you feel like there is good communication amongst the different generations at your company? (n=158)



Industry Perception of what Motivates Young Workers

- Above all else, young workers are looking for a job to receive the monetary compensation (79%).
- Second to money, half are looking for career advancement opportunities with their job (51%).

Most Important Thing Young Workers Look for In a Job



Traditional benefits or employment packages appear to be of less interest to younger employees when looking for a job.

Large organizations (500+ employees) are more likely to say young workers are looking for career advancement opportunities (69%) than companies with fewer employees (47%).



Appendix

Observations by Manufacturing Types

- Primary metal manufacturers tends to be more impacted by the following than electrical manufacturers:
 - Face a lack of new workers entering the workforce or retirement
 - Face difficulty in filling skilled production roles
 - Use formal apprenticeships
 - Value benefits and longevity at organization
 - Are affected by turnover caused by retirement
 - See limited work experience, drug use, and a lack of reliable transportation as socioeconomic barriers to hiring

- Electrical manufacturers tends to be more impacted by the following than primary metal manufacturers:
 - Are affected by outsourcing
 - Face a shortage in engineering or technical roles
 - Take advantage of internships through universities
 - Need training on lean processes
 - Are affected by turnover caused by termination

Observations by Size of Manufacturer

- Manufacturers with 100 or more employees are more likely than smaller companies to:
 - Be negatively affected by retirement as a trend in the next three years
 - Have difficulty filling mechanical techs, electric techs, and welder positions
 - Face a shortage in skilled production
 - See gaps in unskilled production's performance
 - Use focused recruitment to supplement the shortage in qualified workers
 - Take advantage of formal apprenticeship programs and internship programs
 - Re-design processes, try lean manufacturing, or upgrade automation
 - Value the working environment, benefits, and wages at their organization
 - See turnover caused by retirement and working conditions

Observations by County

■ Due to the low number of respondents in Cowlitz and Wahkiakum county, comparisons below will focus only on Clark, Multnomah, Clackamas, and Washington Counties.

- Washington County manufacturers are more likely to face a lack of new workers entering the industry in the next three years (73%) than manufacturers in Clark (42%) or Multnomah (45%) Counties. Multnomah (40%) and Washington (40%) are more likely to be impacted by retirement than Clackamas County (10%).
- Clackamas County has a more difficult time filling CNC machinist roles (70%) than Clark (24%) or Multnomah (29%) Counties. Multnomah County has a more difficult time filling electrical or electric technician roles (29%) than Washington County (7%) organizations.
- Clark County organizations (44%) are more likely to use internship programs through community colleges than Multnomah County organizations (21%).
- Washington County (87%) manufacturers are more likely than Clark (64%) or Multnomah County (57%) manufacturers to be affected by skilled production leaving the workforce.
- Organizations in Washington County (87%) are more likely than Clark (67%) or Multnomah (67%) County organizations to implement lean manufacturing.
- Those in Clark (46%) and Washington (53%) Counties are more likely than Clackamas County manufacturers (20%) to list “minimal opportunities for career advancement” as a cause of turnover in the organization.
- Clackamas County organizations see bad attitudes coming from younger workers (35%) more often than organizations in Clark (11%), Multnomah (8%), and Washington (7%) Counties.
- Multnomah County is seeing more immigrants entering the workforce (26%) more often than those in Clark County (11%).

Profile	
	(158)
County	
Clark	55
Multnomah	51
Clackamas	20
Washington	15
Cowlitz	9
Wahkiakum	1



Observations by Title

- The perspectives of the industry varied slightly by position of the respondent in the manufacturing organization who filled out the survey.
- Executives were more likely than those in other roles to:
 - See automation and outsourcing as items that will affect the organization in the future
 - Anticipate difficulty in finding sales staff in the next three years
 - See gaps in skilled production's problem solving and foundational skills
 - See gaps in managers' and supervisors' computer knowledge and basic technology skills
 - Consider termination the greatest cause of turnover in the organization
 - Think young workers are looking for a friendly environment in a job
 - See the lack of a high school diploma and childcare issues as socioeconomic barriers to hiring
- VPs/Directors/Managers were more likely than those in other roles to:
 - See gaps in skilled production's problem solving
 - Work for a company that has participated in lean manufacturing to improve processes
 - Think young workers are looking for career advancement opportunities in a job

Profile	
	(158)
Title	
Executives	45
CEO	27
President/Owner	9
COO	5
CFO	3
CMO	1
VP/Director/Manager	37
Director/Manager-level	27
VP	10
HR/Training	60
HR/Personnel	46
Training or Org Dev staff	14
Controller	2
Other	9
Prefer not to answer	5

Observations by Title Continued

- HR/Training personnel were more likely than those in other roles to:
 - See retirement as something that will affect the organization in the future
 - Anticipate difficulty in finding qualified skilled production workers in the next three years
 - See gaps in skilled production's cultural competency
 - See gaps in managers' and supervisors' competency across generations
 - Handled shortages in qualified workers with focused recruitment
 - Know the company participated in both informal and formal apprenticeships and internships
 - Work for a company that has participated in lean manufacturing to improve processes
 - See benefits, longevity, and paid time off as the best parts of working for their company
 - Consider retirement the greatest cause of turnover in the organization
 - Think young workers are looking for career advancement opportunities and consistent hours in a job
 - See a history of job-hopping and childcare issues as socioeconomic barriers to hiring