ATTRACTING AND RETAINING MANAGERIAL WORKFORCE IN THE ELECTRICAL CONSTRUCTION INDUSTRY

ELECTRI INTERNATIONAL
THE FOUNDATION FOR ELECTRICAL CONSTRUCTION INC.

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ACKNOWLEDGEMENTS

◆ The research team acknowledges ELECTRI International for its ongoing sponsorship of research supporting the electrical construction and electrical distribution industries financial support. This project was made possible with financial support from Graybar and Southwire.

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INTRODUCTION

The workforce shortage in construction is well known. To learn methods that could improve recruiting and retention of the managerial workforce in electrical construction, this study collected the perceptions and experiences of more than 700 people throughout the United States. Reported here are aggregated results on the factors that attracted and retain these people in electrical construction, as well as comparisons between women and men, minorities and non-minorities, between age groups and, finally, by length of time in the industry. While higher wages continue to be an important piece in recruiting and retention, results suggest there are other factors that matter and should not be overlooked.

EXECUTIVE SUMMARY

Overall, the research project revealed that the Electrical Construction industry may not have as significant a problem as thought regarding image. The issue the industry is facing when it comes to attracting and retaining talent is a lack of awareness. The research revealed that the majority of people join the industry the same year they are introduced to it. Once they are introduced to the industry, they find it has a strong appeal (with almost 90% stating they have never left the industry).

The research project uncovered several key differences in factors that influence women, minorities and younger age groups compared to male respondents.

- Career Opportunity, job security, and thinking & problem solving are more important to <30
- Development opportunities are more influential with younger groups
- Bonus influence peaks at 40 and steadily loses influence from there
- Provided training is highly positive to <30 age group
- Career opportunities, needing a job, experience around it, and relationships are more influential to women
- Both family in general and family in the industry are less influential for minorities and women
- Good pay and hands-on work are more influential for minorities
- Career advising is reaching and positively influencing more minorities than non-minorities

CONCLUSIONS

1. ***We don't have an industry image problem…we have an industry awareness problem. The industry will sell itself if the opportunities available are presented (true for all groups, but especially under 30, female, and Hispanics).***
   - *Career Opportunities and Good Salaries are the two biggest influencers the EC industry has going for it, but if people don't know about them, do they matter?*
   - *Current marketing isn't reaching these groups (young people, women, minorities).*
   - *Marketing campaigns will require a different approach than has been taken previously. If a "bunch of old guys" are developing the message and delivering the message, then it will probably miss the mark.*

2. ***Women & minorities represent one solid solution to the workforce shortage and should be specifically targeted for recruitment and retention in the industry.***
   - *We are making progress - Participation of women and minorities is increasing in the young age and experience groups (but are still very low).*
   - *Women join the industry more readily once they have been introduced. Women don't choose the industry, but when they find it, are more loyal and better educated.*
   - *Fostering mentoring efforts by current women and minorities will support those incoming.*
   - *Relationships whether with family of friends are arguably the #1 influencer (more than pay)*
   - *Templates for referral programs should be created for contractors.*

3. ***Management Personnel are not coming out of the trades anymore.***
   - *Craft training declines by age…70% of 41-60 year-olds have craft training, but this declines to 47% for 31-40 year-olds and 21% in the under 30 age group.*
   - *The message is no longer a hands-on career, instead it is planning/thinking/problem solving.*
   - *Career advising appears to be occurring for minority students, but not non-minorities.*
   - *You must look other places (colleges) for your managers.*
   - *College dropouts or associates degree holders should be a target, particularly with minorities.*

WHAT DOES IT ALL MEAN FOR CONTRACTORS?

WHAT ACTIONS CAN YOUR CONTRACTING FIRM TAKE?

- *Recruitment-Retention Strategy – When deciding how to recruit and retain, you need to hear from a diverse group of individuals. Age, gender and ethnicity affect the influence of different factors and you need to hear from others who are different from you.*
- *Relationships with family or friends are arguably the #1 influencer (more than pay) for men, women, minorities and younger age groups. Referral programs (family & friends) with significant incentives should be part of your recruitment strategies.*
- *Career Opportunities and Good Salaries are the two biggest influencers to attract people. Salaries are more effective than bonuses in recruiting and retention (Both trump non-monetary rewards).*
- *Contractors must promote the industry. If candidates don't know about the industry and opportunities in the industry, they cannot be attracted to it. Contractors have to talk up the industry and the opportunities. A commercial or social media campaign won't magically get the word out.*
- *Pay and fostering good relationships are the best things you can do to retain people.*

Key actions for the electrical construction industry overall as well as for individual electrical contractors are listed on the following pages.

WHAT DOES IT ALL MEAN - NATIONAL

- The industry will sell itself if the opportunities are presented.
  - *This is especially true for those under age 30, women, and Hispanics.*
    - Career opportunities and good salaries are strong positive influences, but people have to know about them.
    - Current marketing is not reaching the intended groups.
      - *If there is a marketing campaign, it does not appear to be reaching the target.*
      - *It will require a different approach than has been taken previously.*
        - *A bunch of old guys making decisions will probably miss the mark.*
  - *Very few management personnel are coming out of the trades.*
    - The message is no longer a hands-on career, instead planning/thinking/problem solving.
- Women and minority participation is increasing in the young age and experience groups (but still low).
  - *Increased numbers indicate these groups are a potential solution for the workforce shortage.*
    - Women do not choose the industry, but when they find it, they are more loyal and better educated.
- Relationships, with family or friends, are arguable the #1 influencer (more than pay).
  - *Templates for referral programs should be created for contractors.*
- Career advising appears to be occurring for minority students, but not non-minorities, Why?

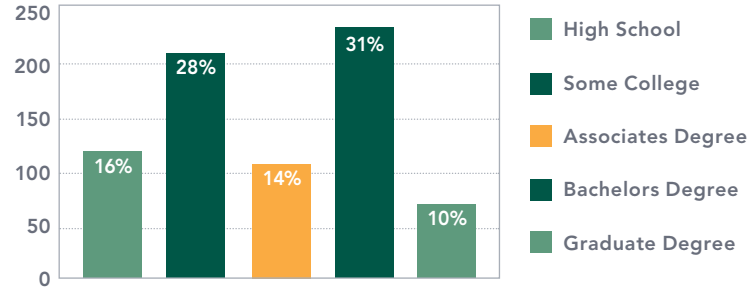
WHAT DOES IT ALL MEAN - CONTRACTORS

- *Decisions cannot be made in a vacuum.*
  - *Age, gender, and ethnicity affect the influence of different factors.*
    - Decision makers have to listen to others who are different from them.
- *Relationships, with family or friends, are arguably the #1 influencer in attracting people.*
  - *Referral programs with significant incentives should be central to recruiting strategies.*
- *The industry will sell itself if people know about it.*
  - *Career opportunities and good salaries are highly influential in attracting people, but if people don't know about them, do they matter?*
    - Contractors have to talk, a marketing campaign will not magically inform people.
  - *Salaries are more effective than bonuses in recruiting and retention.*
    - Both salary and bonuses are better than non-monetary rewards.
    - Bonuses lose influence the older a person gets.
  - *Industry image is a problem but not like we thought. Lack of knowledge is a bigger problem.*
- *Fewer management personnel are coming from the trades.*
  - *Companies have to look other places (probably colleges) for managers*
  - *College dropouts and two-year degree holders are good targets, especially among minorities.*
  - *Contractors need plans for how to train managers who do not come with those technical skills.*
- *Women and minorities are a solid solution to the workforce shortage.*
  - *There are higher levels of participation in the youngest groups.*
  - *Women join more readily once introduced.*
  - *Age matters.*
    - Younger women report less sexism and harassment.
  - *Creating and fostering mentoring programs will support those hired.*
- *Pay and fostering good relationships are the best things you can do to retain people.*
  - *Don't hire jerks.*

SAMPLE DESCRIPTION

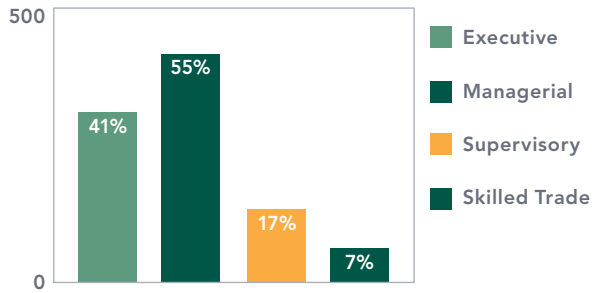
Researchers received a total of 740 responses from individuals in 40 different states. The sample was predominantly white/Caucasian (93.5%) and male (89%) at an average age of 48. Educationally, all have graduated high school, 56% have a college degree, and about 61% have craft training. Respondents' recommendations for education followed their reported educational attainment fairly closely with 63% recommending an apprenticeship, 20% an associate's degree, and 42% a bachelor's degree.

Education Obtained



Respondents reported three main titles in the data: 34% were project managers, 18% were presidents or company owners, and another 22% were other types of executives. The remainder represented a variety of titles. The roughly 40% who reported the title of owner, president, or other executive were consistent with 41% of participants indicating they have an executive role.

Role in Organization



On average, participants were introduced to electrical construction at age 19 and entered the industry at age 23. Almost 64% joined the industry the same year they were introduced to it or when they were old enough to do so. Despite such a large percentage quickly entering the industry, 57% of participants reported that electrical construction was not their first career choice. This suggests that, although many do not plan to work in electrical construction, once they have been introduced to the industry it has a strong appeal. Just over 87% report they have never left the industry, suggesting that the appeal of electrical construction remains strong after beginning work.

With such a high percentage of participants who have never left the industry, it is not surprising that 73% of the sample has more than 15 years of experience, followed by 11% with 11-15 years, 7% with 6-10 years, and only 9% with 5 years or less.

ALL PARTICIPANTS

The survey asked participants about their experiences in electrical construction, what attracted them to the industry, and what keeps them in the industry. It also asked various questions about their perceptions of electrical construction. Participants were asked what attracted them to the electrical construction industry in two ways: They were asked open-ended questions and were asked to respond to the ways specific factors positively or negatively influenced them. *(These factors have been proven to impact work and career selection in other industries.)*

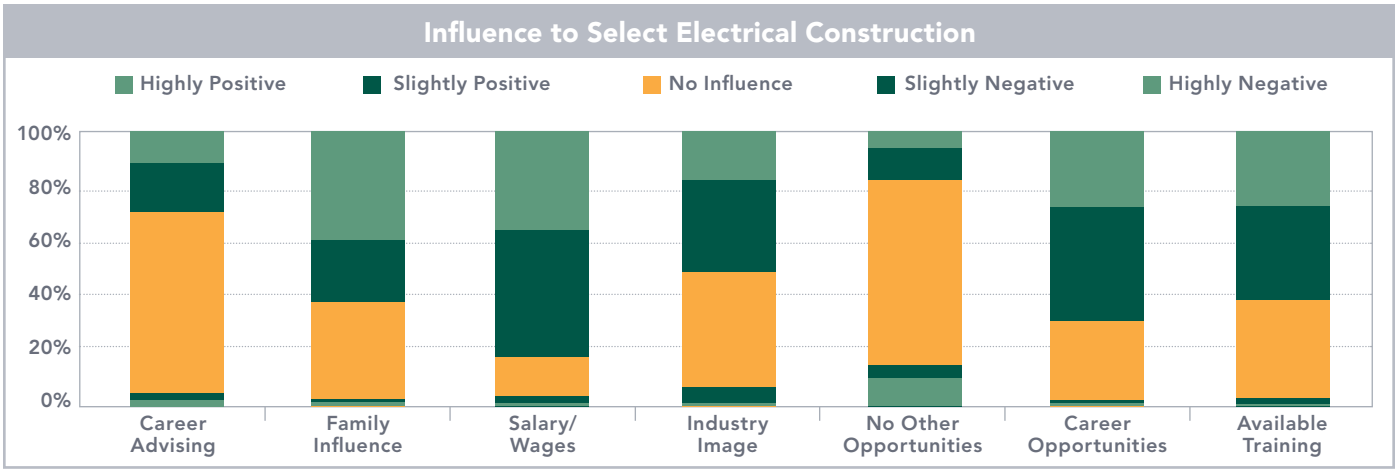
When asked, as an open-ended question, why they chose the electrical construction industry, participants offered a wide variety of responses. However, there were some more common responses as shown in the table below. Although money was a highly reported factor, it was not the most commonly reported. The top attraction factor was family in the industry, with money referenced as the second factor. With 77 and 26 responses respectively, career opportunity and job security are two reported factors which suggest the long-term career aspect of the EC industry is a solid attraction factor. Yet, the problem remains finding ways to educate people about that characteristic of electrical construction.

An additional 21 factors were reported but they each had less than 2% of responses. They include: challenging work, the company, planning/thinking/problem solving work, respectable work, friends, chance, industry size/reputation, no college needed, working outside/not a desk job, rewarding, kept in a location, the environment, autonomy/flexibility, good fit, teacher/advisor recommended it, useful skill, convenient, not physical work, exciting, entrepreneurship, the union, and politics. While some of these attraction factors had relatively few responses, they are all reported as this was an open ended question.

Attraction Factor	Responses	%
Family in the Industry	156	21.3%
Good Pay	113	15.4%
Career opportunity	77	10.5%
Interesting/Liked it	71	9.7%
Needed a job/job available	59	8%
Hands-on work	48	6.5%
Variety of Challenges/locations/projects	32	4.4%
See daily progress of work/build things	32	4.4%
Benefits	31	4.2%
Job security	26	3.5%
Previous experience in or around electrical	24	3.3%
It was a skilled trade	24	3.3%
A specific technical aspect was attractive	22	3%
Apprenticeship/provided training	18	2.5%
Had a degree or training related to electrical	16	2.2%
Relationships/good people	15	2%

**Because participants could report more than one factor, the total may not equal 100%.*

While open-ended responses tell what was most important to an individual, other factors have been shown to attract people to specific industries. As a result, participants were also asked about the influence of several specific factors on their decision to select electrical construction. These factors include: career advising, family influence, salary/wages, industry image, no other opportunities, career opportunities, and available training as: "highly negative", "slightly negative", "no influence", "slightly positive", or "highly positive". The results of these questions support the over-all results of the open ended questions and show that money, family, and career opportunities have more positive influence than any other factors. However, in these results, money was the most positively influential by a considerable distance, with family and career opportunities about equal.



Companies represented in the survey data sample were of different sizes, split fairly evenly among companies with gross annual revenues of less than $10 million, $10-$30 million, $30-$100 million, and more than $100 million. The majority of companies surveyed had between 21 and 500 employees, with a minority of companies larger or smaller than that.

These results are important as they also support and/or refute some opinions about attracting people to the construction industry.

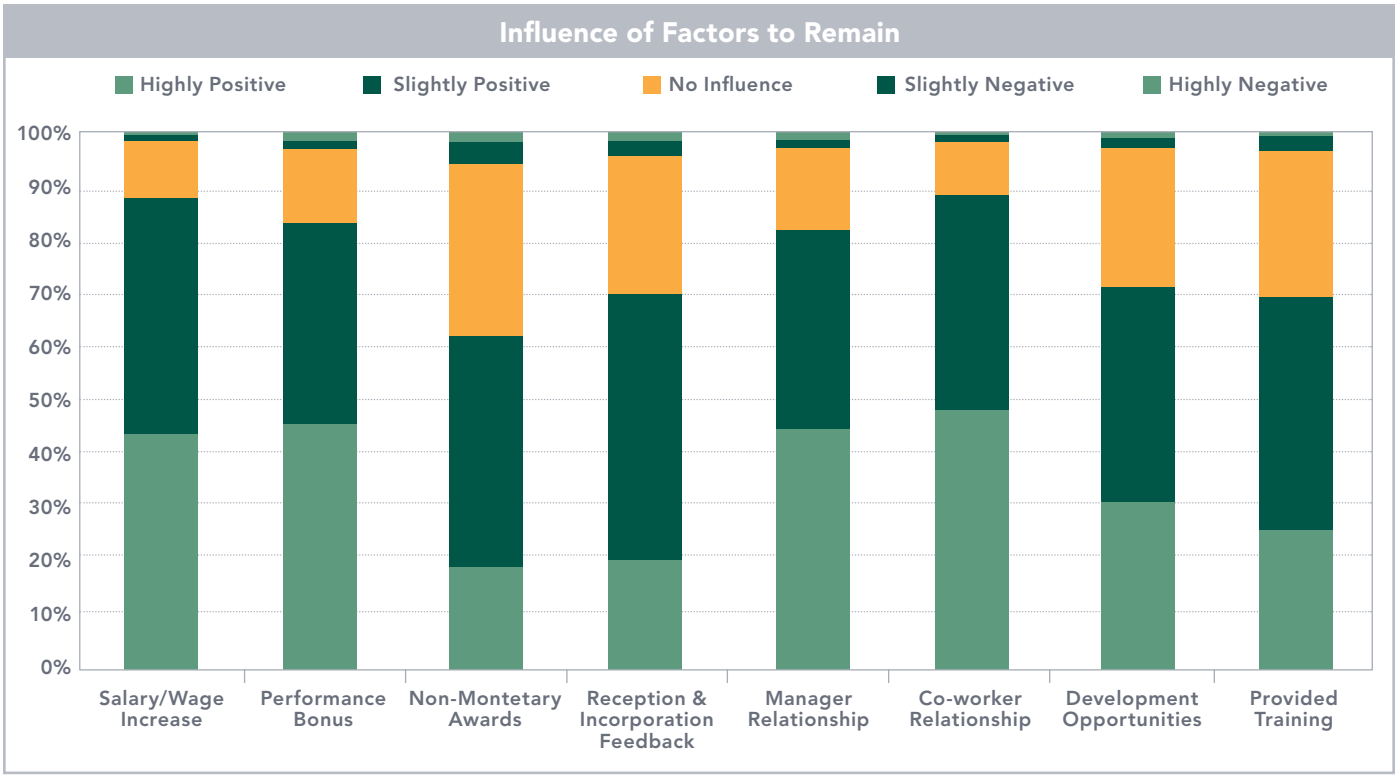
- ***CAREER ADVISING** - 65% indicating "no influence" suggests that school counselors and advisors may not be driving students away from construction, but that they are not talking about it at all.*
- ***FAMILY INFLUENCE** – Positively affected 62% to select electrical construction.*
- ***SALARY/WAGES** – The money has to be there, but this also suggests that it already is.*
- ***INDUSTRY IMAGE** - 52% "positive" responses and 41% "no influence" responses suggest the industry may not have as significant a problem as thought regarding image.*
- ***NO OTHER OPPORTUNITIES** – While a small portion (18%) entered the industry because they had no other opportunities, nearly as many negative responses suggest that the industry also attracts people with many options.*
- ***CAREER OPPORTUNITIES** – 69% positive suggests that once people know about it, the industry is attractive.*
- ***AVAILABLE TRAINING** – Again, what the industry is doing is attractive.*

Although people (students particularly) are not being directed to the industry, the wages, opportunities, and training make EC very attractive, once people know about them.

These same factors that have a positive influence in attracting people to the industry appear also to influence them to stay. More than 89% of the respondents envision a long-term career with their current company. When asked why they see it as long-term, 500+ responses were received with 36% specifically reporting their company is a good place to work, and 23% specifically reporting they have opportunities to grow and advance.

On the other hand, for those who did not see a long-term career path at their current company 27% reported there were not opportunities to advance. These results suggest that, for companies with retention problems, the issue is likely tied to the opportunities they do or do not make available to their employees. Whether a company is a good or bad place to work, response to the question "Would you recommend your children or siblings pursue a career in electrical construction" was overwhelmingly positive (82%) and provides direction for recruiting efforts. With 82% willing to recommend the business to their family, and 62% indicating that family influence was a positive factor in their selection of electrical construction, family referrals represent the cheapest and, most likely, the easiest path to recruiting new talent to the management side of the industry.

Respondents were also asked specifically about seven factors relating to employee retention, and how these factors influence them to remain with their current companies. Because these factors have been previously identified as positively influential in retention, it is expected that they will be generally positive.



While these were indeed all positive, it should be noted that Salary/Wage was not the most positively influential factor. Coworker relationship was slightly more positively influential overall, but was considered more "highly influential" by 5%. This supports the idea that, if companies hire "jerks", retention of other employees will suffer.

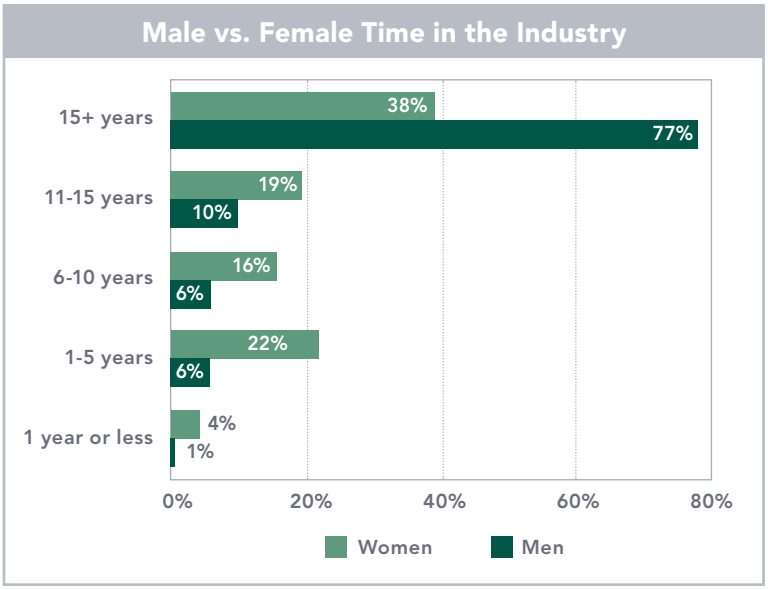
Salary/Wage (88% positive) and performance bonuses (84% positive) should not be confused with non-monetary awards/feedback (63%) as there was a considerable difference in influence. Further, 31% reported that non-monetary awards/feedback have no influence. As a result, companies should consider simply "putting their money where their mouth is" as it is more likely to have a positive influence on influence retention.

The results suggest that, with management personnel, any of these things can positively impact retention, but the most positively influential things a company can do to retain its people are to pay them and foster relationships among them.

WOMEN VS MEN: ANALYSIS

Aside from what factors attracted and what retains men and women in electrical construction, a number of differences emerged demonstrating the differences between the two groups. Ethnically, the female portion of the sample was fairly consistent with the male portion at 93% white. All other ethnicities were within a 1.5% range of each other. Women were slightly younger than men at an average age of 45, compared to age 48 for men. The age difference was reflected in women's time in the industry. There were more women, as a percentage, in all of the time groups except the 15+ years group.

Although women are younger, on average, than men and have less time in the industry, they are introduced to and enter the industry much later in life. On average, men are introduced to the industry at age 18, and women at age 27. Despite the difference in the age at which they are introduced to electrical construction, women (69%) are more likely than men (63%) to enter the industry within a year of being introduced to it. The late introduction may have to do with only 15% of women reporting that electrical construction was their first career choice.



One of the biggest differences between men and women can be found in their education. While 67% of men have craft training, only 11% of women do. Also, women have a considerably higher percentage of degree completion. About 30% of men have a Bachelor's degree, but 41% of women do. Further, while 9% of men have graduate degrees more than double that percentage of women do (21%). Despite these significantly higher levels of educational attainment, only 10% of women compared to 19% of men serve as president, owner or CEO. Women do represent a higher percentage of other executive positions at 28% compared to men at 21%. Of the 20 categories of job titles found in the study, the only other title where women were not underrepresented was secretarial/clerical position. Despite 21% of women holding graduate degrees, only 7% of them recommend a graduate degree.

Comparing the open-ended responses of women vs. men, regarding what attracted them to electrical construction demonstrated that while some factors were consistent between the groups, for other factors gender matters. As shown in the table, some factors have a considerable difference. Those with greater than a 5% difference between men and women have been reported in bold. Having family in the industry, hands on work, and interest in it, were more common factors for men than for women. On the other hand, career opportunity, needing a job, previous experience in or around electrical, and most of all relationships were more common factors for women choosing the industry.

Attraction Factor	Male	%	Female	%	Δ
Family in the Industry	**148**	**22.3%**	**8**	**11.3%**	**11%**
Good Pay	100	15.1%	13	18.3%	3.2%
Career Opportunity	**65**	**9.8%**	**12**	**16.9%**	**7.1%**
Interesting/Liked it	**69**	**10.4%**	**2**	**2.8%**	**7.6%**
Needed a job/job available	**49**	**7.4%**	**10**	**14.1%**	**6.7%**
Hands-on Work	**47**	**7.1%**	**1**	**1.4%**	**5.7%**
Variety of Challenges/locations/projects	29	4.4%	3	4.2%	0.2%
See daily progress of work/build things	29	4.4%	3	4.2%	0.2%
Benefits	27	4.1%	4	5.6%	1.5%
Job security	25	3.8%	1	1.4%	2.4%
Previous experience in or around electrical	**17**	**2.6%**	**7**	**9.9%**	**7.3%**
It was a skilled trade	24	3.6%	0	0%	3.6%
A specific technical aspect was attractive	20	3%	2	2.8%	0.2%
Apprenticeship/provided training	18	2.7%	0	0%	2.7%
Had a degree or training related to electrical	12	1.8%	4	5.6%	3.8%
Relationships/good people	**4**	**0.6%**	**11**	**15.5%**	**14.9%**

**Participants could report more than one factor, increasing the total to more than 100%. Differences greater than 5% are noted in bold.*

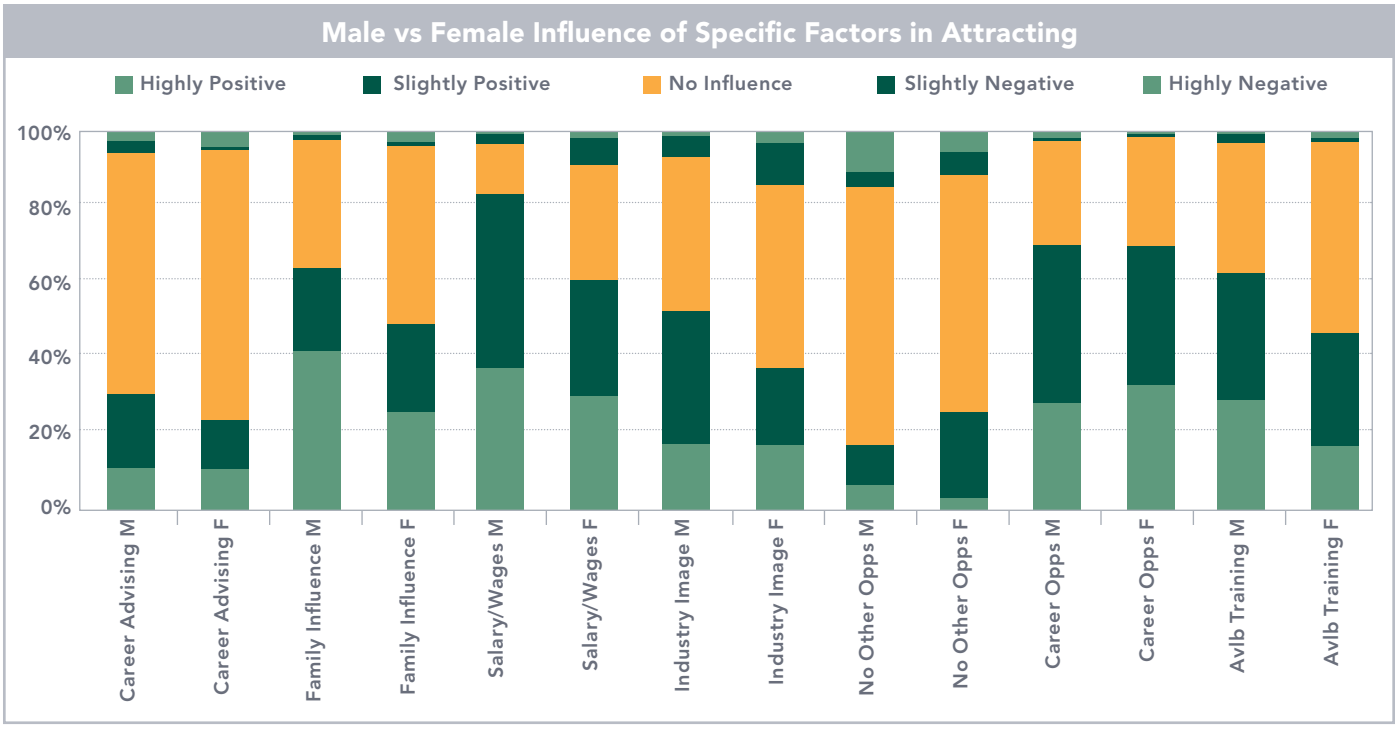
Women were asked if there were factors that attracted them to the electrical construction industry as women. 65 responses were provided with some of the results the same as other factors reported.

Additional Attraction Factors for Women	Responses	%	Additional Attraction Factors for Women	Responses	%
Good Pay	12	16.9%	The Company	2	2.8%
Career Opportunity	8	11.3%	Previous Experience in or Around it	2	2.8%
Needed a Job/Job Available	6	8.5%	Degree/School/Training in it	2	2.8%
Being in a Non-Traditional Role/Industry	6	8.5%	Progress in the Industry	2	2.8%
Immediate Family	4	5.6%	Working Outdoors/Not a Desk Job	1	1.4%
Interesting/Liked it	4	5.6%	Skilled Trade	1	1.4%
Challenging	4	5.6%	Training Provided/Apprenticeship	1	1.4%
Relationships/People	3	4.2%	Exciting	1	1.4%
Benefits	3	4.2%	Company Ownership	1	1.4%
Autonomy Flexibility	3	4.2%	Opinion/Voice is Heard	1	1.4%
See Work Progress Every Day	2	2.8%	Steady job/Steady Work	1	1.4%

**Because participants could report more than one factor, the total may not equal 100%.*

However, some additional factors emerged, including 11 indicating that being a woman did not matter. The percentage reported is based on the entire sample of 71 women who responded to any questions about attraction factors. Although it was a small percent, it should be noted that 6 women responded that being in a non-traditional role was attractive to them.

In comparing men and women by the specific factors, some were consistent. However others suggest differences between genders that should be considered in recruiting efforts.



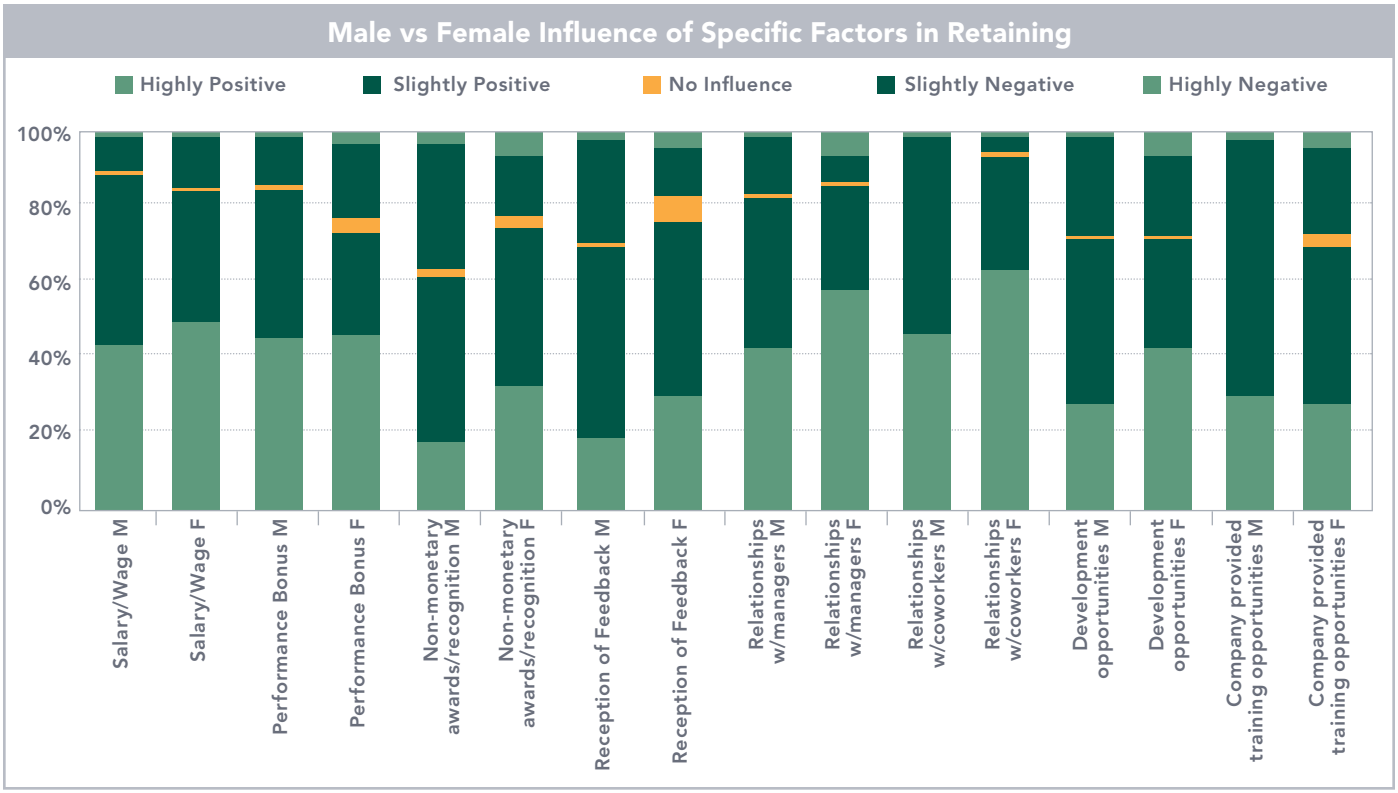
Influence of the factors: "Career Advising" and "Career Opportunities" were fairly consistent between men and women. Differences of note in other factors include:

- ***FAMILY INFLUENCE –*** *The strong influence of family seen among men, is reduced in women. 15% fewer women reported this as positively influential, and more than half of the women reported family had no influence (47%) or a negative influence (4%).*
- ***SALARY/WAGES –*** *Money is a positive influence for 61% of women, considerably less than reported positivelyby men (84%).*
- ***INDUSTRY IMAGE –*** *Twice the percentage of women (14%) were negatively influenced by industry image than men (7%). However, these remain relatively very low levels of negative influence.*
- ***NO OTHER OPPORTUNITIES –*** *Women (26%) are more likely to join the industry because they have no other choices than men (17%).*
- ***AVAILABLE TRAINING –*** *For more than half of the men, training is positively influential (63%). For women, half reported that training had no influence on their decision.*

There was no real difference found between men and women regarding their perception of a long-term career with their current companies, 87% of women and 89% of men both reported "yes". The reasons why they see a long-term career in their current companies were consistent between groups. However, among women who did not see a long-term career path with their current company 38% indicated sexism as the reason.

When asked "Would you recommend your children or siblings pursue a career in electrical construction" women are more likely to make that recommendation as nearly 90% indicated yes, while only 82% of men did. This difference is not large, but is worth noting as it suggests that women may be more loyal to the industry than men.

When comparing male and female responses to specific factors regarding retention, most factors had no difference between men and women as can be seen in the figure below (Again, it is expected that all of these factors would be positive overall). Performance bonuses have a stronger positive influence on men (85%) than on women (75%). However, the reverse is true for non-monetary awards and recognition. Women (75%) are more positively influenced by awards/recognition than are men (62%). Some other minor differences can be seen between slightly and highly positive responses, but for overall positive influence, there were no other significant differences.



WOMEN VS MEN: CONCLUSIONS

- *Women are younger and have spent less time in the industry. This suggests they indeed offer a solid opportunity to meet the workforce demand.*
- *Although women are introduced to the industry when they are much older than men and although electrical is not the women's first choice, nearly 70% join immediately, suggesting that, once they have been introduced, the appeal is there.*
- *Despite achieving higher levels of formal education, women remain underrepresented in ownership. However, they are slightly over-represented in other executive roles. While this might suggest the existence of a glass ceiling at the ownership level, other executive titles do not support that conclusion.*
- *More women hold graduate degrees, but they do not value them. It is unclear if they feel they are not needed at all or simply not necessary for the electrical construction industry.*
- *The significantly lower levels of craft training among women is likely a primary cause of female underrepresentation in titles more directly related to work being put in place.*
- *Open-ended answers and specific questions suggest family is less influential on women than on men.*
- *Relationships are a stronger driver for attracting women. So, while family will be a less effective recruiting method, friends will be more effective in influencing women. As a result, incentive referral programs cannot be limited to family members.*
- *Previous experience in or around electrical and friends/relationships are more influential for women, suggesting that women need to be introduced to the industry.*
- *Inherent interest or a desire to work with one's hands are influential factors for men but not women, supporting the conclusion that women need to be introduced to the industry and its opportunities and suggesting the reason they need to be introduced is that they are unlikely to gravitate to it naturally.*
- *An emphasis on hands-on work is unlikely to be effective in attracting women.*
- *While career opportunities were an influential factor in open-ended questions for women, they were consistent with men in specific questions.*
- *Regardless of gender, money is important. For men, it is more influential.*
- *Industry image is more negatively influential for women than for men. However, its negative influence remains relatively small, suggesting the industry's image is not the problem many believe it to be.*
- *Although women are more likely than men to join the industry because they have no other opportunities, both groups remain largely uninfluenced by this factor.*
- *Training was positively influential for 47% of women, but 50% reported that it had no influence, suggesting that while it won't hurt it is more positively influential with men than women.*
- *With nearly 90% of women willing to recommend the industry to their children, women may be more loyal than men to the industry.*

INCREASING WOMEN IN ELECTRICAL CONSTRUCTION: ANALYSIS

To better understand how to increase female participation in electrical construction, various open-ended questions were posed. All survey participants were asked: What factors do you believe keep more women from working in the electrical construction industry? There were 511 responses to this question and the results strongly point to two main factors and three other supporting factors, presented in the table to the right.

Factor	%
Hard physical and environmental conditions	39%
Perception and history as male dominated	36%
Discrimination	14%
Lack of knowledge/not exposed to or aware of it	10%
Lack of interest	7%
Pressure/intimidation/stress	3%
Family factors	2%

Some additional factors were identified but accounted for less than 1% of the population and are not reported. These factors included responses of men in the industry that likely perpetuate their own gender biases. So, women were asked various questions to understand their perspectives.

Women were asked: ***What barriers have you faced working in the electrical construction industry?*** From this question, five themes emerged with one factor reported by 78% of women: lack of respect/credibility. The other factors were sexual harassment (17%), lower pay (8%), lack of experience (3%) and exclusion from networking (3%)

Women were also asked: ***What do employers need to do to attract more women to the industry?*** The number one answer from 57% of women reporting it was to advertise opportunities. This factor supports lack of knowledge/exposure identified in a previous question as a major barrier to more women entering the industry. Other factors reported most commonly were: Equal pay in positions (20%), promotion of women to leadership positions (12%) and changing perceptions (10%).

Finally, women were asked: ***What suggestions do you have for overcoming the barriers you've faced?*** Three main themes emerged: Be confident (58%), get more training (18%) and get equal treatment (11%).

INCREASING WOMEN IN ELECTRICAL CONSTRUCTION: CONCLUSION

- *Women do not know about the opportunities in the industry for them. Focused advertising is needed.*
- *Male domination of the industry will not change until women are treated credibly on the job site.*
- *Although the gender wage gap in construction is the 2nd smallest in any industry, it remains a barrier.*

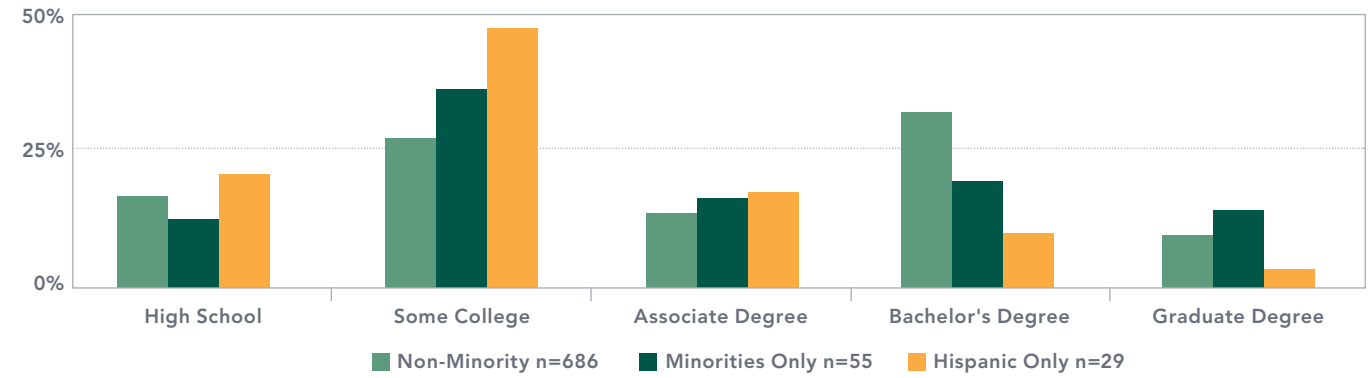
MINORITY VS NON-MINORITY: ANALYSIS

As with women, there were some noteworthy differences between minorities and non-minorities in the study. Because minority participation was relatively low at only 40 respondents, their responses were considered together. 29 of the 40 responses were Hispanic, so results reported here include all minorities (including Hispanics) and separtely just Hispanics. Because of the small sample, results of this comparison should be interpreted with caution.

As with women, there are some differences beyond what factors influence these groups to select and remain in electrical construction. Minorities were younger than non-minorities. There was an average age of 43 for all minorities and 44 for Hispanics compared to an average age of 48 for non-minorities. There was no real difference between minorities and non-minorities regarding proportions of gender. All groups had between 11% and 12% female participation.

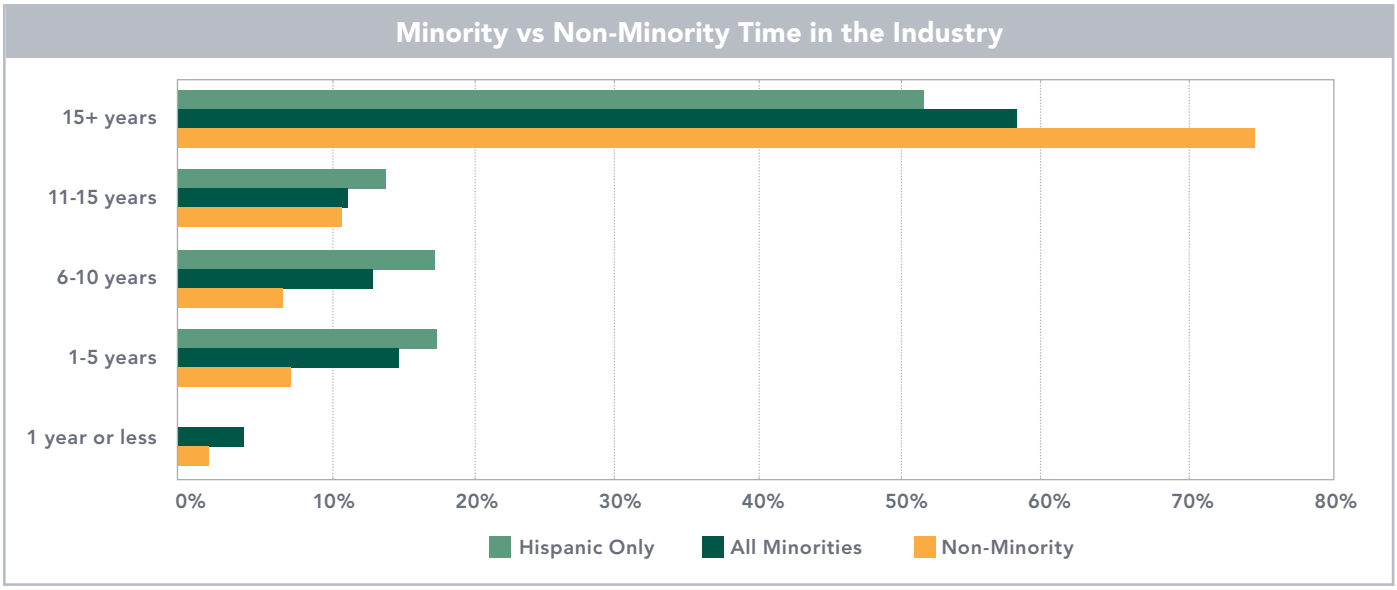
In terms of training and education, minorities and non-minorities were very similar regarding craft training. 61% of non-minorities, 57% of all minorities, and 64% of Hispanics have craft training. However, regarding education, some interesting differences emerged. Hispanics have not only a higher percentage of high school as their highest education level, but they have a much lower percentage of Bachelor and Graduate degree completion (likely related to the high percentage reporting "some college"). The more important question is whether this is related to the difference in education recommendations between non-minorities and Hispanics. Hispanics are less likely to recommend the necessity for a Bachelor's degree (29%) compared to non-minorities (42%). This could simply be a reflection of their educational attainment, but more research would be necessary to support that conclusion.

Educational Attainment of Minorities and Non-Minorities



Minorities and Hispanics specifically are significantly underrepresented at the highest levels of electrical companies. Only 6% of minorities and 4% of Hispanics are "President/Owner/CEO" compared to 19% of non-minorities. Further, only 7% of Hispanics are in other executive positions, compared to 23% of non-minorities. In operational roles however, minorities and Hispanics have proportionally higher levels of participation than non-minorities. Of interesting note was the difference between groups in project management roles. About 33% of non-minorities had project management roles, while about 50% of minorities including Hispanics occupy those roles.

Minorities are introduced to the industry at a slightly older age than non-minorities and have been in the industry for less time. Minorities, on average, are introduced to the industry at age 21 and enter the industry at age 24. Although these ages are slightly higher than non-minorities, the time to join the industry after being introduced is consistent between the groups.



Comparing the open-ended responses of non-minorities, all minorities, and Hispanics regarding what attracted them to electrical construction showed that, while most factors did not have large differences from one group to another, for some, ethnicity may make a difference. Those factors with greater than a 5% difference between minorities, Hispanics, and non-minorities have been bolded. Having family in the industry was less common for minorities than non-minorities, with a smaller difference when compared to Hispanics. Pay was more important to all minorities and Hispanics than to non-minorities, and hands-on work was more attractive to Hispanics.

Attraction Factor	Non-Minority	%	All Minority	%	Hispanic	%
Family in the Industry	**148**	**21.3%**	**8**	**15.4%**	**5**	**17.2%**
Good Pay	**101**	**14.6%**	**12**	**23.1%**	**6**	**20.7%**
Career Opportunity	55	7.9%	2	3.8%	1	3.4%
Interesting/Liked it	67	9.7%	4	7.7%	3	10.3%
Needed a job/job available	52	7.5%	4	7.7%	3	10.3%
Hands-on Work	**42**	**6.1%**	**5**	**9.6%**	**4**	**13.8%**
Variety of Challenges/locations/projects	32	4.5%	0	0%	0	0%
See daily progress of work/build things	32	4.6%	0	0%	0	0%
Benefits	30	4.3%	2	3.8%	2	6.9%
Job security	25	3.6%	1	1.9%	0	0%
Previous experience in or around electrical	22	3.2%	2	3.8%	2	6.9%
It was a skilled trade	23	3.3%	1	1.9%	1	3.4%
A specific technical aspect was attractive	18	2.6%	4	7.7%	2	6.9%
Apprenticeship/provided training	16	2.3%	2	3.8%	1	3.4%
Had a degree or training related to electrical	13	1.9%	3	5.8%	1	3.4%
Relationships/good people	18	2.6%	2	3.8%	1	3.4%

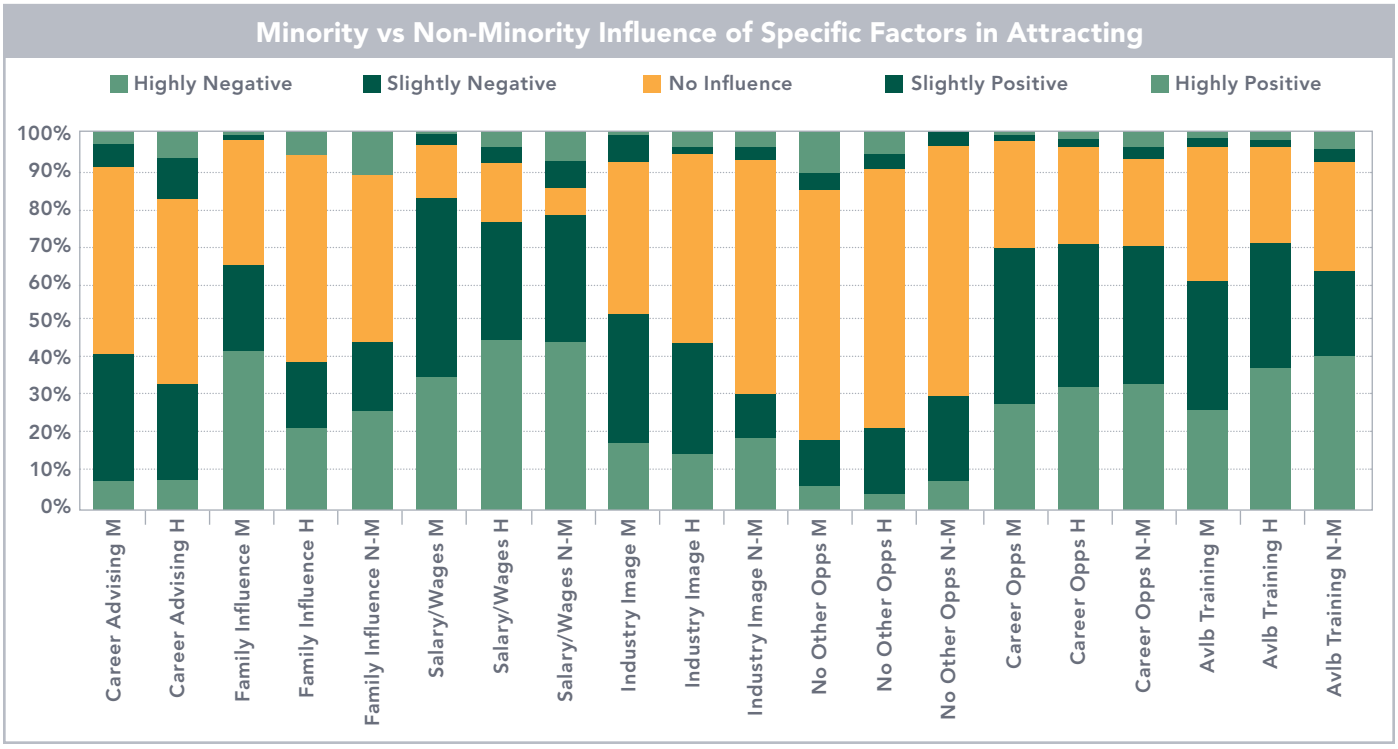
**Because participants could report more than one factor, the total may not equal 100%. Differences greater than 5% are noted in bold.*

Minorities were asked if there were factors that attracted them to the electrical construction industry as minorities. Of the 64 responses provided, some of the results were the same as other factors reported. However, some unique factors emerged such as 26% reporting that ethnicity played no part in their decision.

Additional Attraction Factors for Minorities	Responses	%	Additional Attraction Factors for Minorities	Responses	%
Ethnicity didn't matter	14	26.4%	Job available/needed a job	2	3.8%
Good Pay	9	17%	Interesting/Liked it	1	1.9%
Career Opportunity	6	11.3%	Skilled Trade	1	1.9%
A Specific Technology/System	2	3.8%	Training Provided/Apprenticeship	1	1.9%
Immediate Family	2	3.8%	No College Needed	1	1.9%
Being in a Non-Traditional Role/Industry	2	3.8%	Steady job/Steady Work	1	1.9%
			Union	1	1.9%

**Because participants could report more than one factor, the total may not equal 100%.*

Similar to the open-ended questions, the specific factors saw few places where a notable difference occurred between groups based on ethnicity.



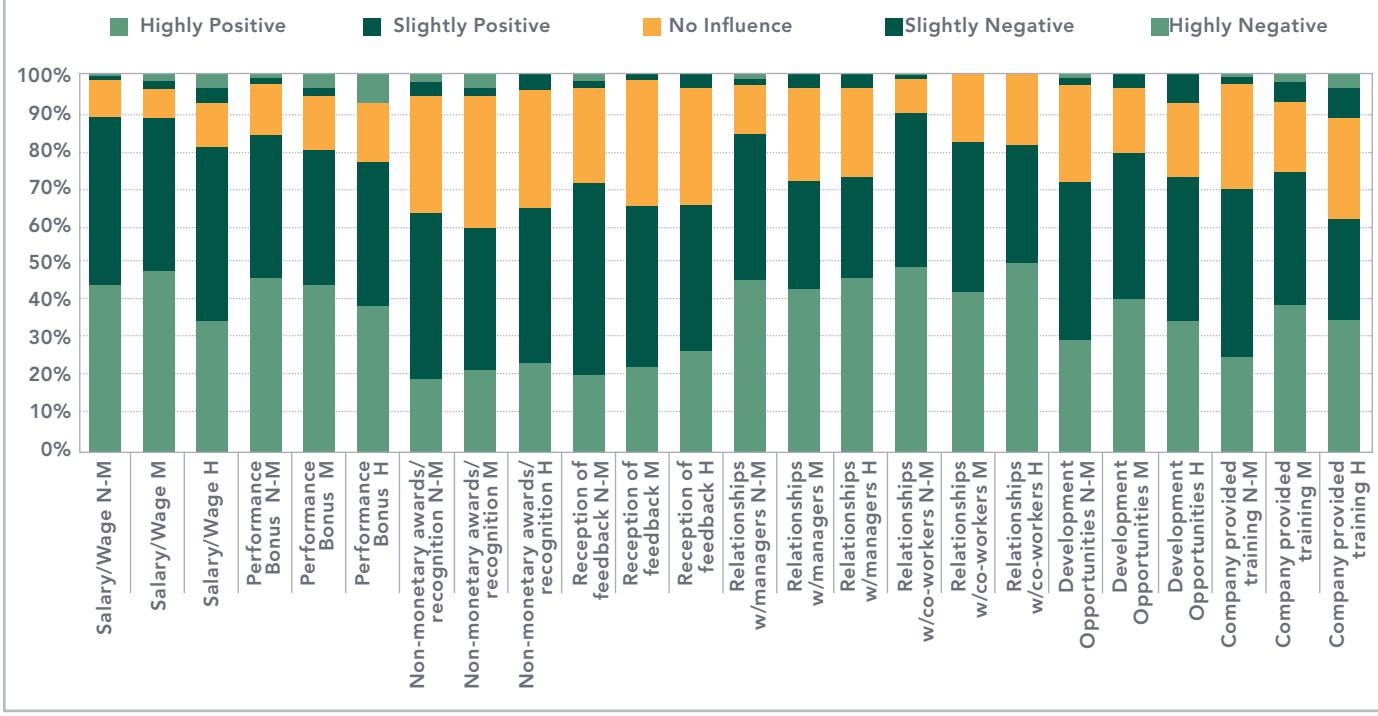
In three categories: "career opportunities", "salary/wages" and "available training", no notable differences were seen. Among the other categories the differences of note include:

- ***CAREER ADVISING –*** *Minorities (41%) and Hispanics (33%) specifically had higher positive influence regarding career advising than non-minorities (29%). Further, the percentage of minorities and Hispanics who reported no influence is 17% lower than for non-minorities.*
- ***FAMILY INFLUENCE –*** *Family influence positively influences more non-minorities (65%) than all minorities (40%) and Hispanics (45%). Further, higher percentages of minorities (55%) and Hispanics (44%) report that family had no influence on their decision to join the industry compared to non-minorities (34%). Additionally 11% of Hispanics indicated that family had a strongly negative influence on their decision to join the industry.*
- ***NO OTHER OPPORTUNITIES –*** *The differences in negative influence from non-minority (11%) to Hispanic (0%) as well as the difference between positive influence in non-minorities (18%) and Hispanics (28%) suggest that for those Hispanics affected by this factor, it has a strong influence.*

Among non-minorities, 90% see a long-term career with their current company, and 83% would recommend electrical construction to their children. At 87% and 81% respectively, minorities and Hispanics have a slightly lower perception of a long-term career with their current companies. At 74% and 78% respectively, minorities and Hispanics are also slightly less likely to recommend the industry to their children. Despite the differences, all groups are solidly positive regarding these questions.

When comparing groups by ethnicity, in regard to specific retention factors, a few had no difference between groups and the others had only small differences. The factors: salary/wages and non-monetary awards/recognition had no differences.

Non-Minority vs Minority and Hispanics on Specific Factors in Retaining



The differences found include:

- ***PERFORMANCE BONUS –*** *More non-minorities (84%) were positively influenced by this factor than Hispanics (76%), while 8% of Hispanics indicated it is a negative influence.*
- ***RECEPTION OF FEEDBACK –*** *Although by a smaller difference, more non-minorities (72%) are positively influenced by this factor than minorities (65%) and Hispanics (65%)*
- ***RELATIONSHIPS W/MANAGERS –*** *More non-minorities (83%) than minorities (72%) and Hispanics (73%) were positively influenced by this factor. In the no-influence category, 24% and 23% respectively of minorities and Hispanics compared to 14% of non-minorities reported that it did not influence them.*
- ***RELATIONSHIPS W/CO-WORKERS –*** *There were small differences indicating that more non-minorities (89%) than minorities (82%) and Hispanics (81%) are positively influenced to remain because of coworker relationships. In the influence category, there was again a 10% difference between non-minorities and Hispanics indicating that minorities and Hispanics are less influenced by co-worker relationships.*
- ***DEVELOPMENT OPPORTUNITIES –*** *A higher percentage of minorities (16%) than non-minorities (26%) reported that this factor had no influence on them.*
- ***COMPANY-PROVIDED TRAINING –*** *Results were inconsistent. Non-minorities were 70% positive and 3% negative; minorities were 72% positive and 8% negative; and Hispanics were 62% positive and 12% negative. This represented the largest negative percentage of any factor, but was not markedly different on the positive side.*

MINORITY VS NON-MINORITY: CONCLUSIONS

- *With higher percentages of minorities and Hispanics specifically reporting "some college" as their highest education, targeting college drop-outs is likely an effective recruiting strategy.*
- *Lower degree completion percentages and recommendations suggest that Hispanic electrical workers place a lower value on Bachelor's degrees.*
- *Higher percentages of women and minorities in the 1-14 year "time in the industry ranges" suggest that these groups, while highly under-represented in the industry, are increasing as the previous generation in the industry moves on.*
- *Higher percentages of minorities, particularly Hispanics, in project management roles and a lower average age suggest that the numbers are there if minorities and Hispanics are promoted.*
- *Good pay is more important to minorities than non-minorities.*
- *Hands-on work was reported more frequently by Hispanics than other groups, suggesting that promotion of that aspect of the work may be effective in Hispanic recruitment.*
- *Despite other research pointing to the influence of families for Hispanics, these results suggest family is more influential on non-minorities.*
- *A considerable percentage (26%) of minorities report ethnicity played no role in their choice of where to work, suggesting that ethnicity should not play a role in recruiting efforts.*
- *Career advising appears to be occurring for more minorities and Hispanics than non-minorities. If this is the case, it is important to understand why it is occurring.*
- *Family influence is not as strong with minorities as with non-minorities, suggesting that recruitment efforts through family may not reach minority groups.*
- *The "no other opportunities" data for Hispanics suggest they may not have the choices non-minorities do. These results are supported by the results of the career choice question for which nearly 70% of Hispanics indicated electrical work was not their first career choice.*
- *Ethnicity has very little impact on the perception of a long-term career with a company or willingness to recommend the industry to one's children.*
- *Performance bonuses are positively influential for most, regardless of group, but less so for Hispanics and for minorities. Combined with salary/wage results, this suggests that salary/wages are a more positively influential monetary factor than bonuses.*
- *Relationships matter to all groups, but they are positively influential on a higher percentage of non-minorities.*
- *Development Opportunities was one factor where minorities were more positively influenced to remain. However, company-provided training did not return similar results, suggesting that minorities appreciate certain types of opportunities but not others.*

INCREASING MINORITIES: ANALYSIS

To better understand how to increase minority participation in electrical construction, various open-ended questions were posed. All participants in the survey were asked: ***What factors do you believe keep more minorities from working in the electrical construction industry?*** There were 284 participant responses to this question and the results suggest six different factors, presented in the table at the right.

Some additional factors were identified but accounted for less than 3% of the population and are not reported. While this question was posed to all respondents, only minorities were asked: ***What do employers need to do to attract more minorities to electrical construction?*** This produced five themes worth reporting: Advertising (28%), Role Models (18%), Higher pay (15%), Equity (15%) and Training (13%).

Factor	%
Lack of education	30%
Lack of desire/ambition	20%
Perceptions of the industry	17%
Background	17%
Advertising/knowledge of the industry	17%
Company/Industry culture	12%

INCREASING MINORITIES: CONCLUSION

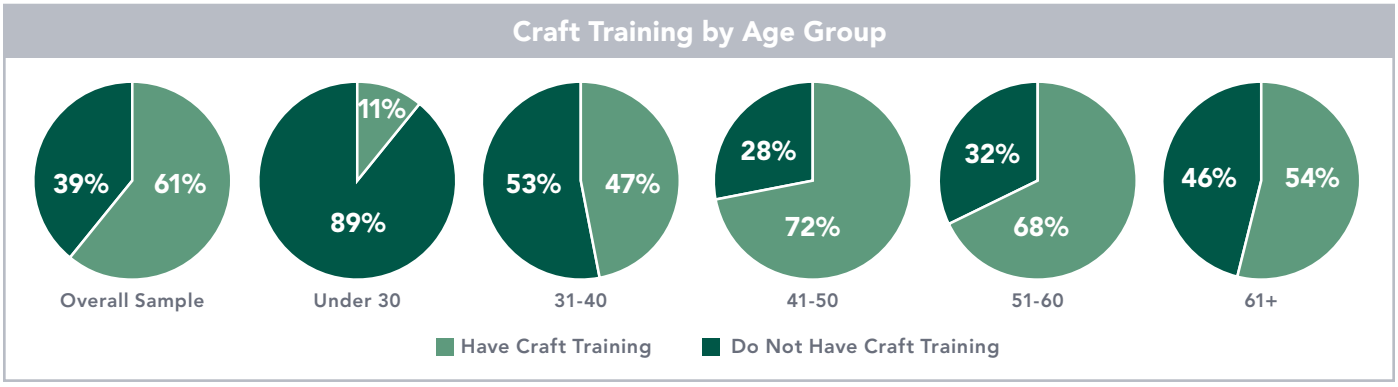
- *As with women:*
  - *Minorities do not know about the opportunities the industry offers. Targeted advertising is needed.*
  - *Minorities in leadership roles need to be mentors/role models.*
- *Training and education (perhaps even education above that provided by the union) could increase minority participation.*
- *Racism is a reality in the industry (20% reporting that minorities lack ambition/desire).*

BY AGE GROUP: ANALYSIS

The sample was also compared based on age ranges. Five age groups, each ranging from 40 to 150 participants, were: Under 30, 31-40, 41-50, 51-60 and 61 or older. Not surprisingly, the percentages of women and minorities were higher in the under 30 and 31-40 age groups than in the older groups. Women increase to around 17% in the younger ranges compared to 7-10% in the older age ranges. Minorities increase to over 10% in younger groups compared to about 6% in older groups.

Age groups showed few consistent trends regarding education but had a few interesting results. Across all groups, bachelor's degree completion ranges from 7% to 12%. The under-30 group had a smaller percentage with completion of a graduate degree, and a much higher percentage (65%) reporting some college. However this may be attributed to age and younger participants not yet having the opportunity to compete a bachelor's degree let alone a graduate degree. Also, in the youngest group, only one participant listed high school as the highest educational achievement.

The hint at higher levels of education in the youngest group could explain the differences between groups regarding craft training. The 40 and younger groups have a lower percentage with craft training compared to older groups. Further, in the under 30 group, nearly 90% do not have craft training.



The average age of introduction and then entering the industry is slightly lower in the youngest age group. However the time to enter the industry after introduction is consistent between groups, as with electrical as a first career choice.

Comparing the open-ended responses of age groups regarding what attracted them to electrical construction revealed a few things that change with age. Despite low reporting of some of these factors they are listed.

Reported Factor	<30	31-40	41-50	51-60
Immediate Family (family business, or family in the business)	17.1%	17.1%	20.7%	21.8%
Career/job Opportunity	**17.1%**	**11.4%**	**12.7%**	**12.3%**
Interesting/liked it	9.8%	11.4%	5.3%	10.1%
Steady job/job security	**9.8%**	**2.9%**	**2.7%**	**1.7%**
Good pay	**7.3%**	**13.3%**	**21.3%**	**17.3%**
Work requires planning/thinking/problem solving	**7.3%**	**3.8%**	**3.3%**	**2.2%**
Technologies/systems/controls/grid/solar specific technical aspect	4.9%	2.9%	0.7%	3.4%
Relationships/people/friends	4.9%	1.9%	4.0%	2.8%
Training provided/apprenticeship	4.9%	1.0%	1.3%	3.4%
Needed a job/job available	**2.4%**	**10.5%**	**8.7%**	**7.3%**
Benefits	2.4%	6.7%	6.7%	5.0%
See work progress every day/build things	2.4%	6.7%	5.3%	4.5%
The Company	2.4%	3.8%	2.0%	0.6%
Variety of Challenges/locations/projects	2.4%	3.8%	4.0%	6.7%
Good respectable work/physical work	2.4%	2.9%	2.0%	0.6%
Industry size, reputation	2.4%	2.9%	2.0%	0.6%
Degree/school/ training in it	2.4%	1.9%	2.7%	1.7%
Working outdoors, not a desk job	2.4%	1.0%	1.3%	1.7%
Solid/skilled trade	2.4%	0.0%	4.0%	5.0%
Autonomy/flexibility/Freedom	2.4%	0.0%	1.3%	0.0%
The environment	2.4%	0.0%	0.0%	0.6%
Working with my hands/technical ability	**0.0%**	**9.5%**	**6.7%**	**8.4%**

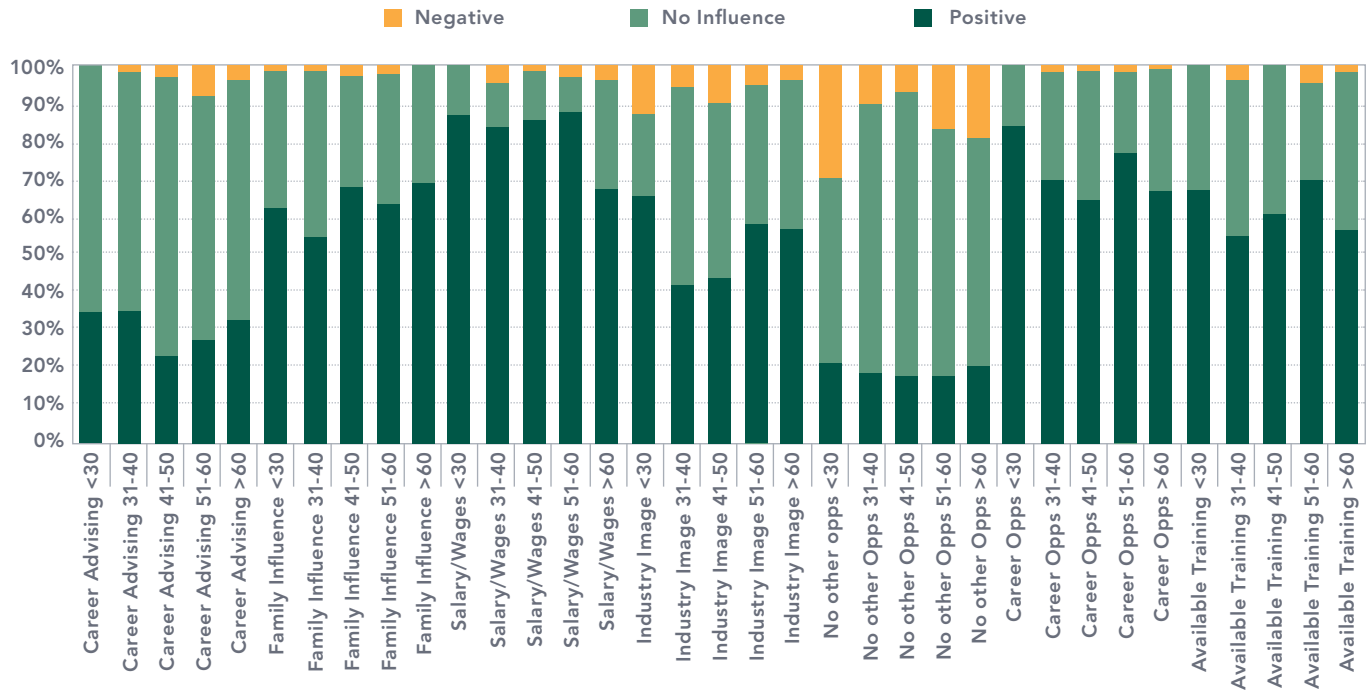
**Notable differences are noted in Bold.*

Differences of note include the following:

- ***PERFORMANCE BONUS –*** *This factor was more frequently mentioned by the youngest age group.*
- ***A STEADY JOB/JOB SECURITY –*** *This factor is considerably more frequently mentioned by the youngest age group.*
- ***GOOD PAY –*** *Although important for all age groups, the older age groups mentioned this factor more frequently.*
- ***WORK REQUIRES PLANNING/THINKING/PROBLEM SOLVING –*** *The youngest age group more frequently mentioned this factor than older groups.*
- ***NEEDED A JOB/JOB AVAILABLE –*** *For the youngest age group, this factor was considerably less reported.*
- ***WORKING WITH MY HANDS/TECHNICAL ABILITY –*** *While this was a consistent factor for older age groups, in the youngest age group it did not matter.*

Every age group returned some differences on attractions factors. Despite these individual differences, there were few differences that suggest trends that could be acted upon in recruiting.

Influence of Specific Factors in Attracting by Age Group

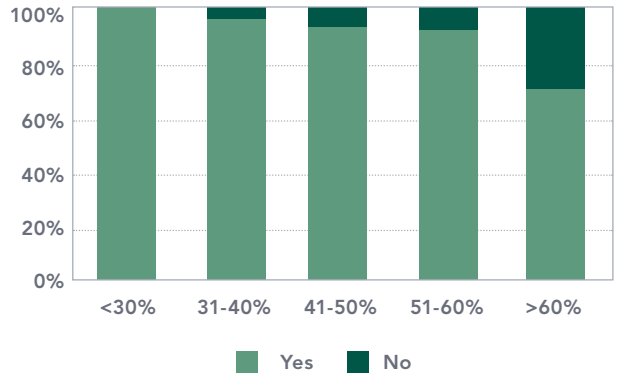


The factors and groups with differences of 10% or more include:

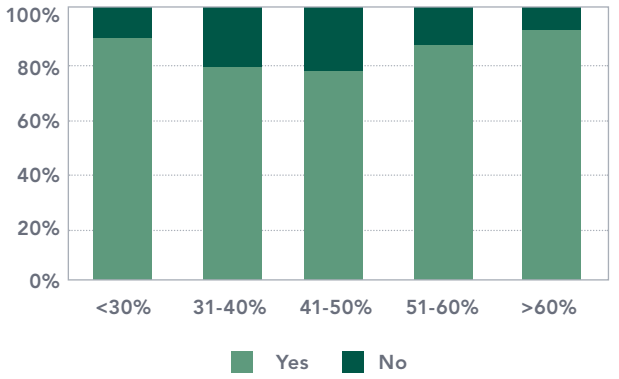
- ***CAREER ADVISING –*** *The age 41-50 group (22%) was lower than other groups, including an 11% difference from the >60 group and a 13% difference between the <30 and age 31-40 groups.*
- ***FAMILY INFLUENCE –*** *At 54%, the 31-40 group was 9% lower than the 51-60 group (63%), 11% lower than the <30 group (65%), and 14% lower than the 41-50 and >60 groups. This difference appears to be an aberration.*
- ***SALARY/WAGES –*** *This was much less important in attracting the >60 group (67%) than all other groups (83-87%).*
- ***INDUSTRY IMAGE –*** *The under-30 group has a higher percentage of positive influence (65%) than all other groups that range from 42% to 58%. The <30 group also has a higher percentage of negative influence (14%) than all other age groups (5-11%).*
- ***NO OTHER OPPORTUNITIES –*** *The under-30 group had a higher no influence percentage (49%) than all other groups that ranged between 59-71%. The <30 group also had a higher negative influence (30%) than all others (8% to 20%).*
- ***CAREER OPPORTUNITIES –*** *The under-30 group had the lowest no influence number at 16%, compared to 22% to 34% for other groups, and the highest positive influence, 84%, compared to 64% to 77% for other groups.*
- ***AVAILABLE TRAINING -*** *A lower percentage of positive influence occurred in the age 31-40 group (54%), with the highest positive percentage in the age 51-60 group.*

All age groups were positive regarding their perception of a long-term career in the industry. Differences in these responses do exist. For the long-term question, the 30% negative responses in the over-60 group can be explained by their age and proximity to retirement. When the negative responses based on age or retirement are removed, that group only has 5% negative response. Similarly, when negative responses for pending retirement are removed from the age 51-60 group, their negative response rate reduces from 9% to 5%.

Long-Term Career with Your Current Company

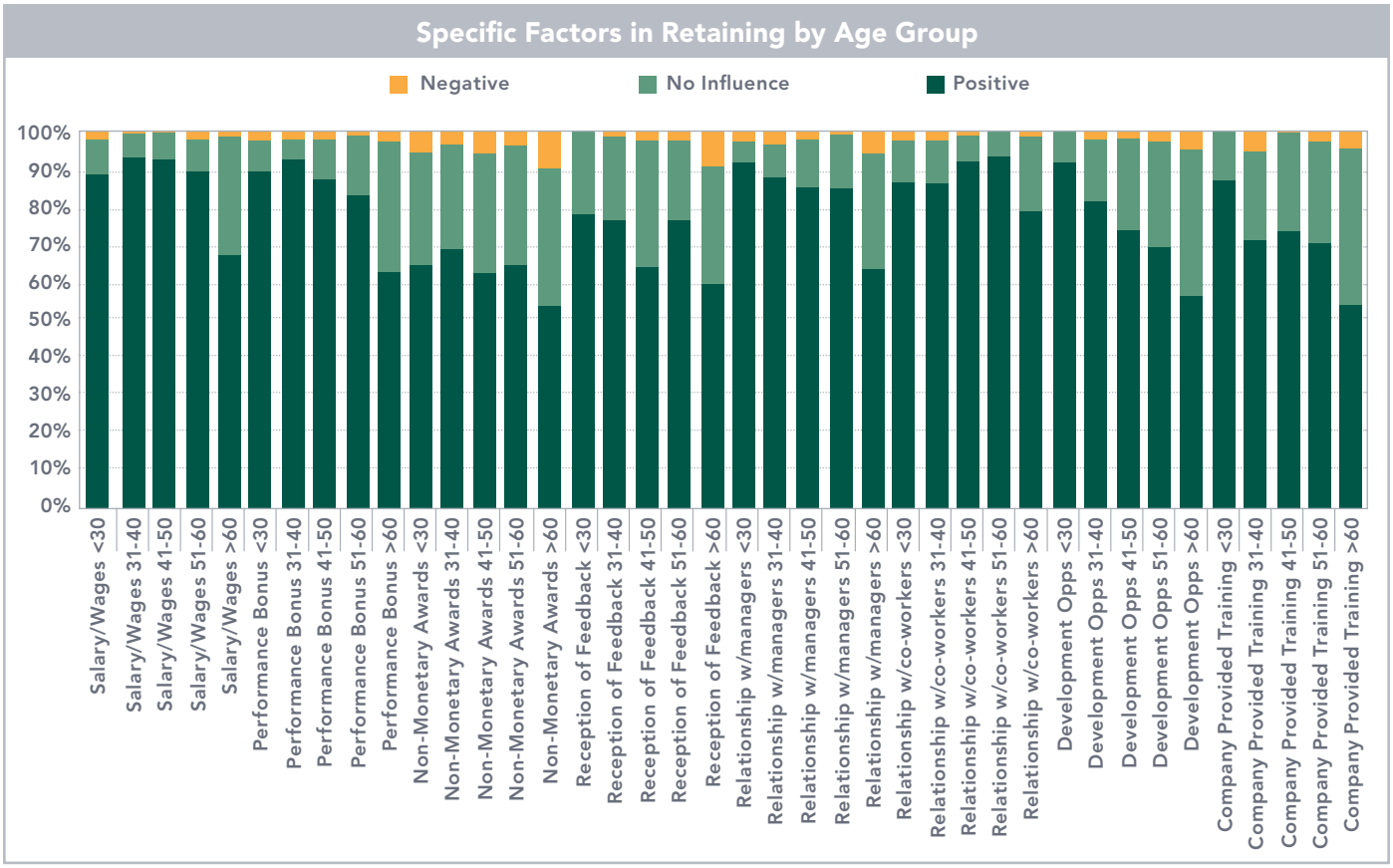


Recommended Your Children to the Industry



Recommending their children pursue a career in the indsutry was overall positive. Over three-fourths of all groups indicated they would recommned the industry to their children. However, the curve of these responses is concerning as the highest rates of negative responses occurs for the 31-50 age group and the lowest rates of negative responses occur for the youngest and oldest groups.

When comparing age groups with regard to specific retention factors, differences between groups existed but, as with attraction factors, few trends were identified. The oldest age group however, >60, was different from the other groups on every factor. The difference for this group was consistent, the over-60 group reported lower percentages of positive influence in every factor. It is assumed that some of these responses are a result of pending retirement, therefore there are not any factors that would influence them to continue working.



The differences between groups relating to each factor include:

- ***SALARY/WAGES –*** *The over-60 group had no influence percentage (31%) that was 23-25% higher than all other groups. This difference was also seen in the positive influence category where 67% of the >60 group was 22% to 26% lower than any other group.*
- ***PERFORMANCE BONUS –*** *Again the >60 group had a no influence percentage (34%) that was considerably lower than any other group (reporting 5% to 16%). The difference in positive influence was also large with the >60 group at 63% while others ranged from 83% to 92%. Over-60 was the largest difference, however the age 51-60 group's results were also less positive. Looking at the five groups, the data suggest that, for younger individuals, performance bonuses are more positively influential with the effect loosing influence with age.*
- ***NON-MONETARY AWARDS/RECOGNITION –*** *Just over half (53%) of the over-60 group is positively influenced by this factor, however other groups run 62% to 69% positive.*
- ***RECEPTION OF FEEDBACK –*** *Again the over-60 group was less positively influenced by this factor. However the 41-50 group mirrored the >60 results with a positive influence 17% below the other groups.*
- ***RELATIONSHIPS W/MANAGERS –*** *At 62% positive, the over-60 group is 23% to 30% lower than all others.*
- ***RELATIONSHIPS W/CO-WORKERS –*** *At 78% positive, the >60 group is 8% to 15% lower than all others.*
- ***DEVELOPMENT OPPORTUNITIES –*** *The over-60 group, at 56% positive, is 13% lower than the next group, and 36% lower than the youngest group. This factor shows a consistent trend by age that younger individuals place a higher value on development opportunities that reduce as they age.*
- ***COMPANY-PROVIDED TRAINING –*** *The oldest group at 60+ is less positive then all others, and the youngest group is more positive than all others, with mid-career age groups stabilizing between the two.*

BY AGE GROUP: CONCLUSIONS

- *Younger groups have more education but lag in degree completion. It is believed this is the result of younger individuals not yet having completed their degrees. This would suggest that the industry will see higher levels of educational attainment in the coming years.*
- *Younger age groups will be more influenced by career opportunities in recruiting messages.*
- *Recruiting younger age groups should also emphasize career opportunities, job security, and planning/thinking/problem solving in the industry, as the under-30 age group mentioned these factors more frequently.*
- *Recruiters younger age groups should be aware that these individuals are less likely to be considering electric just because they need a job. Further, the factor "working with my hands/technical ability" did not matter for the youngest age group. This suggests a shift in who is assuming management positions in the industry.*
- *Career Advising hit a low mark in the 41-60 year age groups. Higher percentages of positive influence in the over-60 group and groups under age 40 could reflect changes over time regarding this factor. The results suggest that, among younger groups, increased career advising is improving. However at 35% positive for age 31-40 and under-30 groups, the positive number is not reaching many people.*
- *When asked specifically about Salary/Wages, groups under age 60 reported a higher influence than the over-60 group. This suggests that if money decisions are being made by individuals in this group, they should be made aware of the difference in perceptions. However, open-ended responses showed older groups mentioned pay more frequently.*
- *Industry image is improving for the youngest age group (65%) and has seen a considerable jump among age 31-40 (42%) and 41-50 (43%) groups. Likewise, the no influence responses in the under-30 group (22%) was lower than all others by 15% to 30%, suggesting that image is improving with time. It should be noted however, that the negative perception group was also higher among under-30s, While the industry image is improving, it should not be completely forgotten. Having no other opportunities was a positive influence for about the same percentage in all groups. Lower percentage of no influence and higher percentage of negative influence in the under-30 range suggest that more are selecting the industry, or selecting the industry even given other choices.*
- *As the youngest age group, the under-30s are more positively influenced by career opportunities, suggesting that those individuals were well informed and the industry is making a compelling case for them to join.*
- *Available training is positive, peaked in the age 51-60 group, but declined in the age 41-50 and 31-40 groups. The decline stopped in the under-30 group.*
- *Short of individuals who will retire soon, respondents in all groups see a long-term career path with their companies, suggesting again that once people join, the industry makes a good case for itself.*
- *Although more than ¾ will recommend the industry to their children, the group age 30-50 most likely to have children at ages where they would be selecting a career are least likely to recommend the industry to them.*
- *Older individuals need to be aware of their biases in making retention decisions as they are affected differently than all other groups.*
- *The positive influence of bonuses appears to peak with individuals under age 40 and steadily decreases from then on, suggesting that bonuses might be effectively tied with positions and age.*
- *Those who are near retirement still value relationships, especially relationships with co-workers more than with managers. However, they value them less than other age groups. This may be anticipation of retirement or it may simply be they do not care anymore.*
- *Development opportunities matter more to younger individuals. They never become negative to older workers, they simply lose their positive influence.*
- *Providing training is really valuable to workers under age 30, at which point it stabilizes through the career and sees a considerable decline at the end of a career.*

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INDEX NO. F3420