

2008 Report

Motivation

Factors of Young Engineers



OTHER PEPP YOUNG ENGINEERS ADVISORY COUNCIL PRODUCTS

[A Guide to Enhancing Professional Development: From College Student to Company Principal](#)

Engineers in Elected Office Presentation and Speaker Notes

[How-to Manual for Seminars, Socials, and Ceremonies: A Practical, Step-By-Step Guide to Organizing and Hosting Events for Local and State Chapters](#)

[NSPE's Mentoring Guide for Small, Medium, and Large Firms](#)

Strategies for Member Retention and Attraction

OTHER PERTINENT PRODUCTS FOR/ABOUT YOUNG ENGINEERS

Books

[Career Success in Engineering](#)

[Engineer Your Way to Success](#)

[Future Leaders Focus Report](#)

[How to Become a Professional Engineer, 5th ed.](#)

Web Seminars

[Ethics and Professionalism for Students and Young Engineers](#)

[Leadership and Emerging Generations: Part 1 & 2](#)

FOREWARD

The NSPE/PEPP Young Engineers Advisory Council (YEAC) was formed in 2001 to identify and involve engineers under age 35. The YEAC evolved from the understanding and belief that young engineers want and need to interact with their peers. Young engineers also need the opportunity to develop as leaders, learning to work together towards a common goal on an issue that is pertinent to the engineering profession and interesting to younger members. The YEAC has once again provided benefits to both PEPP and NSPE, as they researched, prepared and developed this, their fifth new document entitled “Motivation Factors of Young Engineers.”

Engineers, like all people, are motivated by different factors. Likewise, certain factors tend to de-motivate us. One large difference in discussing these factors is age. What motivates me as an engineer, with 30 plus years of experience is significantly different than what motivates a 30-year-old engineer.

The YEAC did a great job in developing this report. It gives us insight on how to better motivate young engineers, and on what mistakes to avoid. The more we involve young engineers, the better prepared they become to lead us into the future. We need them, and they need us to give them the right motivation to continue this career path. I hope you gain something useful from “Motivation Factors of Young Engineers.”



Kevin C. Skibiski, PE,

NSPE/PEPP Chair, 2007-2008

ACKNOWLEDGEMENTS

The Young Engineers Advisory Council of NSPE's Professional Engineers in Private Practice would like to thank the PEPP Executive Board for its encouragement, support, and resources in the development of this report for use by NSPE and other societies alike. This committee gives special thanks and acknowledgement to the individuals and companies that contributed their time and effort to the creation of this document. Without the hard work of these people and the support of their companies, we could not have accomplished this feat. As such, we would like to recognize these supporters, shown below, and thank them publicly for their assistance.

The Young Engineers Advisory Council of the Professional Engineers in Private Practice Division

2006-2007 Chair	2006-2007 Vice Chair
Dawn Edgell, P.E. (Lisle, IL)	Bobbi Claybrooke, E.I. (Tampa, FL)

Committee Members

Chris Callahan, P.E. (Windsor Locks, CT)	Andrea Martinez, P.E. (Tampa, FL)
David B. Conner, E.I. (Denver, CO)	Todd McLeod, E.I. (West Palm Beach, FL)
Richard Delp, P.E. (Oreland, PA)	Tim Schultheis, E.I. (Johnston, PA)
Brandon Ebent, P.E. (Green Bay, WI)	Lambrina Tercalla, E.I. (Farmington Hills, MI)
Carlos Garza, P.E. P.G. (Edinburg, TX)	Andrew Vecellio, P.E. (Jefferson City, MO)
Brandon Keith, P.E. (Springfield, MO)	Eric West, P.E. (Midland, TX)

Advisors & Staff

Fred Palmerton, P.E., F. NSPE (Springfield, MO)	John Parisi, P.E. (Green Bay, WI)
Kim Granados, CAE (Alexandria, VA)	



Parkhill, Smith & Cooper, Inc.
Engineers • Architects • Planners



OBRIEN & GERE



Kimley-Horn
and Associates, Inc.



MWH



BUILDING A BETTER WORLD



SCHILLER AND HERSH
ASSOCIATES, INC.

TABLE OF CONTENTS

Section	Page
1.0 Introduction	4
2.0 Motivating Factors	5
2.1 Career Growth/Advancement Opportunities	6
2.2 Self-Improvement	7
2.3 Compensation via Salary	8
2.4 Desire to Prove Worth	10
2.5 Client Satisfaction	10
2.6 Interest Level in Job	11
2.7 Sense of Professional Obligation	12
3.0 De-motivating Factors	14
4.0 Dispelling Myths	16
5.0 Summary Remarks	17
6.0 Survey Results (Summarized)	18
7.0 Raw Survey Data	20

1.0 Introduction

The NSPE-PEPP Young Engineers Advisory Council conducted a national survey from September 2006 to March 2007 to gauge the thoughts of the engineering community about what motivates them in their careers. The YEAC distributed this survey to over 4,000 young engineers (younger than 35) at different stages of their careers and in various disciplines and geographical areas with over 600 responses received. This document describes and outlines the survey results and provides a generalization of the young engineer's perspective on what motivates them in their work and careers.

The YEAC generated a survey with 12 questions that asked specific information about the respondent, such as "What is your area of practice?" and "Please indicate the number of years since obtaining your degree." Following these 12 questions about each respondent, there were 25 questions that dealt with "motivating factors."

The participants were asked to quantify their feelings and beliefs about several items considered either as motivational or as impacting the individual's desires and thoughts regarding their careers and job position. For each of these questions, the respondents were asked to rank the items' significance with respect to the degree in which these factors motivate them in their work with "1" being the least significant and "5" being the most significant.

Webster Dictionary's definition of the word "motivate" is to provide with a motive or to impel. For the purpose of this survey, motivation refers to the degree in which certain factors impel and influence a person's work or to what degree those factors stimulate someone to produce results. On the other hand, results of the motivation as shown by the survey results can vary greatly from self-satisfaction within the workplace and in one's career to directly affecting the decision to change jobs. It is important to acknowledge that this survey deals with the motivational factors and their importance, but it does not discuss or try to discern the results that may be the ultimate outcome of these factors.

The group tallied the survey results to determine the top 10 responses and overall motivating factors of engineers. The top de-motivating factors were also determined and are discussed. The responses were further analyzed to provide some insight into how these motivators and de-motivators affect individual engineers and how the motivators change over time as the engineer acquires more experience and is promoted to higher positions within their company. In addition to the survey responses, many of the respondents provided personal comments relevant to their specific experiences on this topic. Several of these comments have been selected and appear throughout the document.

2.0 Motivating Factors

“Think about why you became an engineer in the first place. Chances are the answer to that is different for everyone. If you can pinpoint what makes engineering interesting/exciting/etc., then that's your motivation.”

While this statement is true for all engineers, as individuals find different motivating factors for different aspects of their lives, common themes tend to appear when taking a much broader view of this topic. Based on the survey results of over 600 young engineers, several topics appeared to repeat themselves as top motivating factors in career choices. These top factors will be discussed in more detail in the following sections, as well as the factors that were deemed to fall to the bottom of our survey, i.e. least motivating.

Based on the survey results, the top motivating factors included

1. Career Growth/Advancement Opportunities
2. Self-Improvement
3. Compensation via Salary
4. Desire to Prove Worth
5. Client Satisfaction
6. Interest Level in Job
7. Sense of Professional Obligation

While this list is not all-encompassing of the most motivating factors for young engineers, these are seen to be some of the most common factors at different stages of an engineer's career. It should be noted that in the review of the survey results, this list of factors did however change in relative importance at different levels of career experience. This is important to note, as typically, with work and life experience comes changes in priorities, however overall, according to this survey the motivation factors generally remained similar. The list of top “least motivating factors” remained constant with experience level.

“I think many of these factors probably should be motivators, but may not be according to varying company cultures. It's important for young engineers to pick their own key motivational factors and stick with those even though they may not provide the easiest pathway to success with a given company.”

In addition to discussing each of these factors, this document includes the summarized and raw survey data collected during the research of this topic.

“Bottom line, if you want to motivate young engineers, give them a variety of things to do—we love to learn!”

We have noted that motivating factors can change with experience level. While the respondents of the survey are all ‘young engineers’, in today's working world, that grouping now consists of two different generations – Gen X and Gen Y. The

characteristics of each of these generations are very similar, but distinct differences do exist between these two generations.

Generation X and Y Parallels

Some of the characteristics of Generation X that feed into this motivational factor are

Values, such as work-life balance, individuality, efficiency and directness.
Willingness to change jobs for career advancement; they ask why before working extra hours.

Some of the characteristics of Generation Y that feed into this motivational factor are

Preferred flexibility to define job and take on multiple tasks.
Willingness to change jobs for career advancement and challenges.

2.1 Career Growth /Advancement Opportunities

The highest ranking motivator in our survey was “Career Growth/Advancement Opportunities.” One question to ask then is, “Why is this factor so important?”

Young engineers, at their core, want to create something new and innovative. If a job becomes stagnant, routine, or devoid of purpose or meaning, this will de-motivate young engineers. Suppression of growth, lack of mentoring, lack of challenges, and lack of effective and targeted training all undermine the goals of young engineers. A lack of recognition for outstanding performance and out-of-the-box thinking is often interpreted as a lack of career growth opportunities and diminishing advancement opportunities. The process of growing in a company very much parallels the progression of raising children—children want to succeed, they want to gradually become independent of their parents, ultimately becoming parents of their own, and they want their parents to trust them and have confidence in them. In similar ways young engineers need their development to be motivationally positive and progressive—graduate engineer to project engineer to senior partner.

In the survey, this factor trumped “Compensation via Salary.” As long as salaries are reasonably competitive, not necessarily the highest possible, this factor will provide the strongest retention of young engineers. This motivating factor does not appear to change as the engineer progresses through their careers from zero to 12 years of experience.

The following are some comments from the survey that help to underscore why this factor is so important:

“Young engineers should be given opportunities to work on new projects to grow and continue to develop new skills. Also, recognition of good work as well as hard work goes a long way to create a positive work environment. Small perks, such as an afternoon off, company provided lunch, and flexible hours and work

environment boost morale 100%. Most importantly of all, a simple thank you is all that people need sometimes.”

“Number one motivator for me is the ability to collaborate and create new knowledge—either technical or business related. Ability to grow and develop through continuous learning (formal and informal) is a close second.”

How to “raise the bar” in companies to align with this motivating factor:

Lead young engineers and help educate them, don’t just manage them.
Mentor and teach young engineers, don’t just give out assignments and tasks.
Include young engineers in the business development and planning side of the firm.
Help young engineers map out a career goal and the steps it takes to get there.
Teach young engineers the breadth of the business, including how finances, liability, marketing, and client relationships all affect the way in which they choose to perform their job.

2.2 Self-Improvement

When young engineers were asked to rank the top motivating factors, “Self-Improvement” was clearly identified as one of the top 10 motivators. Self-improvement comes from the individual’s desire to learn, develop, adapt, and perform successfully in order to better serve their employer, client, society, and the environment. Self-improvement is often seen as a balance and compromise between the employer and the employee.

Self-improvement can only be accomplished when the young engineer is willing to negotiate a time and manner in which they are willing to apply the resources and capital in a way that serves them in a productive and learning capacity, either technical or personal.

Technical improvement is often dictated by licensure requirements set by the state or advancement expectations set by the employer. For the young engineer prior to licensure, however, it is good practice to participate in the courses or seminars offered to 1) get in the habit of acquiring and tracking professional development hours and 2) expand their knowledge base to improve their ability and value as an engineer not only personally, but also to the company for which they work. For the licensed young engineer, though technical improvement is required, the individual has the opportunity to select and participate in courses or seminars that suit their discipline or interests. In this, the engineer gains a degree of self-improvement in their area of specialty that can benefit them throughout their career.

Personal improvement can often refer to the individual’s growth and betterment that does not necessarily reflect direct monetary investment by the employer. For example, a young engineer is often eager to get involved in a service organization that will help them

improve their opportunities for personal growth and recognition in the community. This might involve prioritizing personal, communication, philanthropic, or religious interests, bettering themselves and the company for which they work.

In a way, the non-technical improvements are the most difficult to accomplish. This is often the case because these interests are not dictated to the young engineer by a governing body, but rather driven by a personal interest or desire. Employers should be willing to negotiate or discuss with potential employees the mechanism in which the young engineer will be able to explore these interests. The young engineers, in turn, should be willing to keep the employer satisfied in order to continue this well-orchestrated balance. A young engineer with these options will likely be more motivated to work harder, to go the extra mile, and to deliver a better service and product to both the employer and the client.

Self-improvement can be linked to many of the other factors that will make a young engineer accept employment or continue employment with a specific employer. Personal self-improvement is of great interest not only to young engineers, but also to more seasoned engineers.

We must remember the words of Albert Einstein: *“Try not to become a man of success, but rather try to become a man of value.”* When considering an individual’s value, that individual is very likely to include self-improvement as one of the components of his or her value.

2.3 Compensation via Salary

Of the most significant motivators for young engineers, “Compensation via Salary” is third behind “Career Growth/Advancement Opportunities” and “Self-Improvement.” Salary, as opposed to bonuses, is the take-home pay that can be expected weekly, biweekly, or monthly for the work that employees are hired to do. It should not be a surprise that salary made the list of most significant motivators for many reasons. With bills to pay and families to support, engineers must be compensated for their in-depth, specialized technical knowledge used to serve their clients. They must also be justly compensated for the risk that engineers are exposed to as part of the profession.

One respondent stated very simply that compensation via salary was important because it was necessary to support a family. Whether single or married, with children or without children, everyone has to pay for basic necessities, as well as hobbies and outside interests that require money. Another respondent emphasized that engineers should “get paid for what we know.” So whether someone is paying bills, supporting a family, or budgeting for a vacation, compensation via salary is the means to his or her goals.

As engineers develop in the workforce, compensation via salary may become less of a motivator depending upon the individual circumstances. Obviously, career advancement and job satisfaction may become more dominant motivators as engineers become more financially stable. However, as engineers progress, so does the potential for additional

financial obligations or desires. Engineers with families and children have college tuition, moving into their “dream house,” and providing a good financial starting place for their children as priorities. Those without children or with children that have left the home may wish to focus on taking their “dream vacation,” having the financial means to visit places or do things they have always wanted to do or to retire.

Provided that the compensation for the job is sufficient, it is more likely that the seasoned engineer is willing to stay with a job that fulfills professional and personal goals than to relocate employment for a career advancement opportunity. Younger engineers would be more willing to take a new, higher paying job, at least until family stability becomes a bigger necessity, according to the results of the survey.

Survey results show that compensation via salary is a significant motivator for young engineers. This significance is expected because of the financial reasons previously discussed. If someone feels that they are underpaid, they may also feel undervalued or underappreciated.

For instance, a person’s value being reflected by the salary was summarized by one of the respondents: *“We also would like to be paid what we are worth. You shouldn’t have to go looking for a new job to find out how much you are worth.”* Some therefore view salary as a reflection of the value placed upon the individual or position by the employer and the value that they bring to the company. Additionally, comments by some of the young engineers surveyed reflect a desire to be paid for all time worked, not just a base salary. Two comments regarding salary versus hourly wages are the following:

“Fair compensation for working a lot of hours.”

“Being compensated with pay for hours worked over 40 is a huge motivation factor; comp time/flex time is not as motivating as pay.”

Interestingly enough, survey results indicated that compensation via salary is listed as the third most significant motivator, while “Compensation via Bonuses” is listed as one of the least significant motivators. The salary is an amount that the employer has committed to pay the engineer for services and is not as indefinite, discretionary, or volatile as the occasional bonus.

Typically, salary far exceeds bonuses, so the bonus may not have much of an impact if someone is not paid adequately initially. Bonuses, particularly in private practice, may also be impacted by financial performance of the firm, which may be dictated by the economy, coworkers, liabilities, and other factors that may be outside the control of the young engineer. Such bonuses are volatile and indefinite because of how much the firm’s well-being influences them, regardless of the employee’s contributions or performance.

Compensation via benefits was not listed as either a most significant motivator or a least significant motivator. Benefit packages are important additions to salary for a young engineer, but things such as family health insurance and retirement plans may not be the

most important factor for someone who has recently entered the workforce compared to a more tenured employee. However, generally, a good benefits package is indicated as important to the young engineers surveyed.

2.4 Desire to Prove Worth

“Desire to Prove Worth” is not only in the top 10 results for the overall survey, it is also in the top 10 results of each experience category. These results indicate that career stage does not significantly matter, but that communicating engineers’ contributions to society and their companies is an important motivator. Regardless of which career stage an engineer is in, it is always important to convey to others that engineers contribute to the greater good of society and their company.

For some younger engineers, their motivation is related to proving that their generation is just as hard working as the older ones.

As indicated by one young engineer,

“There are so many Baby Boomers that say ‘Gen X/Y are lazy and don’t work hard’ ... proving them wrong motivates me a lot!”

The survey did not provide an abundance of comments for this particular topic. This could be due to the obvious nature of the topic or to the fact that people are sometimes uncomfortable discussing it.

In the categories from 0-8 years of experience, gaining respect from colleagues is one of the top 10 motivators. This can go hand-in-hand with a desire to prove worth. Younger engineers just starting out in their careers would be more concerned with gaining respect from colleagues than someone in the later stages of their career. Those in the later stages are likely to have already gained a certain amount of respect from their colleagues as well as an area of expertise, and therefore, striving to achieve that goal of desired respect (versus maintaining already achieved respect) would not be as important as it was earlier in their career.

Thus, the generalization can be made that the desire to prove worth to the young engineer is a significant motivator for young engineers.

2.5 Client Satisfaction

“Client Satisfaction” ranks in the top 10 motivating factors for young engineers. The importance of client satisfaction as a motivator may vary over the course of an engineer’s career. For example, an engineer working in his or her first job out of college may be working directly for a more senior engineer. This relationship insulates the engineer from the client, so pleasing the client may not motivate the engineer. However, keeping the senior engineer happy is likely to motivate. In this instance, the senior engineer is really an internal client of the young engineer. As the engineer advances in his or her career and gains the opportunity to work directly for clients, the importance of client satisfaction as

a motivator will increase. There are likely numerous reasons for this and most can be linked to the other motivators.

Client satisfaction may motivate engineers because for some people it is human nature to serve and please others. An engineer who works hard to keep a client satisfied even in the case of a one-time transactional relationship is truly motivated by the desire to please their client.

Client satisfaction may motivate engineers for other reasons as well. Keeping a client satisfied may be the shortest path to other significant motivators, such as keeping senior management happy. A satisfied client could lead to more work opportunities, which may translate into job security, career growth, increased compensation, additional responsibilities, advancement, respect, and recognition.

A satisfied client is validation that your hard work and efforts are appreciated. Conversely, if you work hard to satisfy a client and your efforts are not appreciated or acknowledged in some way, you may become unmotivated to work for that client.

“I am motivated by the fact that my work is a continual learning experience—keeping up with technology as well as learning to handle clients and projects effectively.”

2.6 Interest Level in Job

“Interest Level in Job” was one of the top motivating factors for the overall survey in each experience category. Regardless of the career stage, it is important to engineers that their job does not become stale and mundane. This is evident from the following comments taken from the survey.

“I prefer to work on projects that are high profile, with a lot of design work involved. I also enjoy working on projects of a type that I have not worked on before (the learning process).”

“I am motivated as long as my job is never boring—there is a new challenge every day.”

Based upon the popular cartoon, “Dilbert,” it could be generalized that engineers would like the mundane, repetitive, and boring tasks. This survey shows something drastically different. It shows a desire for engineers to learn new things and take on new challenges.

For some of the younger engineers, interest level in their job would certainly be raised by learning new things and having the opportunity to work on something new. Essentially, young engineers are still trying to build their skill base, expand their “real-world” and practical knowledge, and establish their worth.

As an engineer progresses to one of the later career stages, it is more likely that interest levels would be peaked by taking on new challenges, such as new innovative designs, difficult projects, etc. For the more seasoned engineer, taking what they already know and providing additional challenges would likely make each job more interesting.

2.7 Sense of Professional Obligation

“Sense of Professional Obligation” ranked ninth in the top motivational factors for engineers. Over 65% of survey respondents think that being obligated as a professional is motivational, while half of these respondents believe it to be the most significant factor.

In each experience level category, over 70% of respondents are motivated by their sense of obligation as a professional. Those with eight to twelve years of experience rank professional obligation as the highest, at a rank of five out of the top 10 motivators. Engineers with two to four years of experience rank it as the lowest at 10th out of the top 10 motivators. Perhaps those with more experience better recognize the importance that their professional status has had in their careers.

These are solid percentages, and they may provide relief to those wondering how engineers view the importance of their professional licensure and the proven competence and responsibilities that accompany it. The percentages also strengthen the argument for professional licensure from the viewpoint of it being a motivator and of engineers recognizing their obligations as professionals. Still, these numbers could be improved as the engineering profession continues to communicate its message about the contributions and significance of the profession and licensure.

Respondent comments add some additional insight into why a sense of professional obligation is a motivating factor. For instance, a participant commented that he or she would like to be regarded as a professional and have the esteem and responsibility such a position in the workplace holds.

Another respondent commented about how professional status can help to pursue passions, such as sustainable design and fostering education, with the knowledge and credibility associated with being a licensed professional. Somewhat related to this concept is politics. In some ways, a professional title can be a political asset. Still, others noted that professional status and the obligation associated with it reflected competence and importance for protecting and enhancing the public welfare.

In addition to the discussion above, NSPE provides a useful discussion to consider and remember about the importance of the professional status and licensure of engineers:

Why Should You Get Licensed? (www.nspe.org)

“Licensure, first of all, is the mark of a professional. The licensure process demands an extra measure of competence and dedication. While not all

engineers find licensure mandatory for their chosen career paths, the PE initials after their names can provide many advantages.

Employers in all disciplines indicate that they find licensed professional engineer employees to be more dedicated, with enhanced leadership and management skills. These employers look to licensure in evaluating the advancement potential of employees.

Licensed engineers also achieve an enhanced status in the eyes of the public, which equates the engineer with professionals licensed in other fields.

Licensure is an indicator of dedication to integrity, hard work, and creativity, and an assurance that the individual engineer has passed at least a minimum screen of competence. Of course, licensure is just a starting point for professional growth and development, and participation in professional activities is part of the ongoing activities of a true professional.”

NSPE adds the important points that

“As an engineer, you must adapt to a rapidly changing workplace. Just consider: You could be faced with restructuring, downsizing, outsourcing, privatization, and re-engineering.

Numerous studies have shown that the employment for life era is a thing of the past. In the future, most people will have as many as a dozen jobs of varying duration. Professionals such as engineers will need to position themselves to adapt if they are to prosper in this ever-changing environment. Are you prepared?”

To conclude this point, the sense of professional obligation is a significant motivational factor for engineers. This factor appeals to the duty and emotion of engineers in their reputation, competence, and protection and enhancement of the public welfare.

3.0 De-motivating Factors

In the introduction of this document, a motivating factor was defined as something that would impel and influence a person's work or in what degree those certain factors stimulate someone to produce results. The survey results consistently showed several items as motivating factors, even if the top results changed during the course of a career.

However, during the course of this survey, several topics started to consistently show at the bottom of the survey results. Upon initial review, these factors appeared to be disregarded as possible motivating factors. Further review and discussion of each of these items found that these topics are not just afterthoughts, but could actually have a negative impact on motivation – hence “de-motivators.”

This negative impact may not only affect morale and production, but could also ultimately lead to resentment and turn-over of staff, client dissatisfaction, and degradation of a company's reputation.

“I don't think it's too much to ask that work be fun and comfortable. I expect to be challenged and given responsibility. But if I don't get a chance to smile and laugh on the job regularly, then I need to find a new one.”

While the ultimate goal of this document is to provide some insight into how to motivate younger professionals at different levels of their careers, it was necessary to include this list of de-motivating factors to make the reader aware of their existence and detrimental impact. An in-depth discussion on each of these factors is not included here. However, several comments gleaned from our survey to emphasize the impact of some of these factors are included.

Based on our results, some of the higher ranking de-motivators include

- i. physical work space, office layout
- ii. office climate/mood
- iii. lack of adequate equipment and technology (i.e. computers and software)
- iv. company policies
- v. prestige
- vi. recognition by peers outside the company
- vii. recognition by company management
- viii. lack of mentoring relationships
- ix. lack of adequate performance evaluations and career development planning

“I would be motivated a lot more if management would use my engineering knowledge more instead of focusing my work on day-to-day issues.”

“Some anti-motivators are: repeated monotonous projects or designs, little or no yearly raises that keep pace with inflation yet you're aware your skills are in

HIGH demand, being in a job where your skills are not utilized, having no mentors, being assigned outright 'grunt' work just because you're the new recruit, being kept behind the scenes with clients and company events despite producing quality work, etc, etc."

"I think that people are generally less motivated when they regularly are not given all the information they need to make the proper decisions on a project. It is difficult for a young engineer, new to their industry, to get up to speed without their supervisors/mentors, etc., letting them know of things to watch out for when designing a project."

"I have left a few jobs in my short career because I felt I would always be known as the 'inexperienced engineer.' I left one job because the employer wasn't willing to offer any type of professional training/advancement and the senior engineer was unwilling to mentor."

4.0 Dispelling Myths

Despite all of the recent press coverage about generational differences in today's workplace, many of the survey responses indicate that young engineers are looking for much of the same basic recognition and respect that previous generations have sought in their careers. The responses received in our survey emphasize that simple expressions of recognition and respect by colleagues and supervisors still play an important role in determining an engineer's career satisfaction and motivation.

“Also, recognition of good work as well as hard work goes a long way to create a positive work environment. Small perks, such as an afternoon off, company provided lunch, and flexible hours and work environment boost morale 100%. Most importantly of all, a simple thank you is all that people need sometimes.”

“At this point in my career, it is nice to be recognized by my peers and supervision for the work that I do but it is not what motivates me. It is easy to say this because our organization does not do well at recognizing performance but I continue to work hard to ensure opportunities are available to me.”

The survey results also reveal that young engineers are concerned with many of the larger issues currently facing the profession, namely that engineering may be struggling to remain a competitive profession and that long-term commitment to a single employer may limit an individual's experience and professional development. They are aware of many of the global business changes currently affecting the industry and many recognize the increasing value of varied experience and knowledge.

“If a young engineer is willing to work and learn, then getting a job and staying employed is easy. The concern seems to be whether the extra work and education are worth the compensation when compared to less demanding occupations.”

“The fewer experiences a young engineer has with different work environments/supervisors, the less likely they will be able to evaluate their motivation accurately. For example, a young person who has only worked in a positive work environment may assume their motivation is intrinsic to them, but put under very poor management may suffer in motivation and productivity.”

The good news for senior-level engineers is that young engineers are concerned with the larger picture of both their company and the industry. This means that they are “tuned-in” to the way that the industries' leaders are working to address current concerns as well as the potential implications for the profession. As much as globalization and technology continue to push engineering into new directions, today's young engineers are just as concerned as their parents' generation with feeling as if they are a valuable part of both their company and their profession.

5.0 Summary Remarks

The engineering industry is currently facing difficult times. A decrease in the number of graduating engineers is making it more difficult for employers to find individuals matching their specific industry needs. At the same times, employers are finding it harder to retain the more seasoned staff engineers. To address this issue, NSPE's PEPP-YEAC developed this motivational evaluation that can help principals, partners, and Human Resource departments to better understand the needs, concerns, motivating factors, and de-motivating factors expressed by young engineers.

As engineers expand their areas of expertise they demonstrate what keeps them motivated and this stays fairly consistent, but the significance or importance of that factor changes. Career Growth and Advancement Opportunities led the way as the most motivating followed by Self-Improvement. Compensation via Salary and Client Satisfaction, although their own categories, may be reasons and by-products of the Career Growth and Advancement factor. Other factors, including Desire to Prove Worth, Interest Level in Job, and Professional Obligation, will also help retain young engineers.

Employers must understand one of the most negative and counterproductive aspects to their organization and employees are the De-motivating Factors. The negative impact these factors may have on young engineers and an organization offset the beneficial motivation that companies are providing, resulting in young engineers leaving their current employer.

Several behind-the-scene factors play into the results of this survey, but as an overview, the results are rather consistent across the surveyed group. Some response variance is attributed to age, experience, organizational culture, gender, and location.

Many companies may underestimate the cost of losing young engineers, therefore under invest in them. However, companies can avoid this costly loss by realizing the benefits associated with investing in young engineers appropriately and subsequently retaining them.

This resource will help decipher the myths and truths and lead employers to keeping their young, valuable workforce committed, motivated, and productive. The amount of effort an employer invests in employees to make them the most productive they can be is by far a lucrative investment in their organization. The cost of training and/or cross-training employees to cover vacancies left by dissatisfied engineers, who have left in search of "better" opportunities, is not only a monetary matter, but also a moral blow to the employees "left behind" who have to pick up the slack left by the void.

In addition to the sections above that discuss the results of our survey, the summarized and raw survey data collected during the research of this topic have been included with this document.

"I still need to work on becoming the engineer I've always wanted to be."

6.0 SUMMARIZED SURVEY DATA

*Note highlighted motivators were found across all age categories.

MOST SIGNIFICANT MOTIVATORS

	0-2 Year Category
13(m)	Interest Level in Job
13(a)	Career Growth / Advancement Opportunities
13(h)	Desire to Prove Worth
13(j)	Gaining Respect from Colleagues
13(w)	Self-Improvement
13(f)	Compensation via Salary
13(x)	Sense of Professional Obligation
13(e)	Compensation via Bonuses
13(v)	Recognition by Immediate Supervisor
13(i)	Ensuring Job Security

	2-4 Year Category
13(w)	Self-Improvement
13(a)	Career Growth / Advancement Opportunities
13(f)	Compensation via Salary
13(h)	Desire to Prove Worth
13(b)	Client Satisfaction
13(m)	Interest Level in Job
13(j)	Gaining Respect from Colleagues
13(n)	Level of Responsibility
13(e)	Compensation via Bonuses
13(x)	Sense of Professional Obligation

	4-8 Year Category
13(a)	Career Growth / Advancement Opportunities
13(f)	Compensation via Salary
13(h)	Desire to Prove Worth
13(w)	Self-Improvement
13(m)	Interest Level in Job
13(b)	Client Satisfaction
13(v)	Recognition by Immediate Supervisor
13(x)	Sense of Professional Obligation
13(j)	Gaining Respect from Colleagues
13(k)	Having/Obtaining Flexibility of Work Hours

	8-12 Year Category
13(a)	Career Growth / Advancement Opportunities
13(m)	Interest Level in Job
13(b)	Client Satisfaction
13(w)	Self-Improvement
13(x)	Sense of Professional Obligation
13(n)	Level of Responsibility
13(h)	Desire to Prove Worth
13(f)	Compensation via Salary
13(k)	Having/Obtaining Flexibility of Work Hours
13(p)	Office Climate (Mood / Tone Environment)

	12+ Year Category
13(b)	Client Satisfaction
13(h)	Desire to Prove Worth
13(a)	Career Growth / Advancement Opportunities
13(f)	Compensation via Salary
13(m)	Interest Level in Job
13(g)	Desire to Enhance Public Health, Safety, and Welfare
13(w)	Self-Improvement
13(x)	Sense of Professional Obligation
13(p)	Office Climate (Mood / Tone Environment)
13(d)	Compensation via Benefits

LEAST SIGNIFICANT MOTIVATORS

*Note some motivators may be found in the least and most list because of where they fell in the ranking.




0-2 Year Category		2-4 Year Category	
13(r)	Prestige	13(q)	Physical Work Space (Office Layout/Decor/Size)
13(q)	Physical Work Space (Office Layout/Decor/Size)	13(r)	Prestige
13(c)	Company Policies, Rules, Etc.	13(c)	Company Policies, Rules, Etc.
13(e)	Compensation via Bonuses	13(e)	Compensation via Bonuses
13(s)	Recognition by Company Management	13(t)	Recognition by Peers Outside the Company
13(k)	Having/Obtaining Flexibility of Work Hours	13(y)	Supervisor Management Style / Personality
13(o)	Mentoring Relationships	13(o)	Mentoring Relationships
13(t)	Recognition by Peers Outside the Company	13(d)	Compensation via Benefits
13(y)	Supervisor Management Style / Personality	13(s)	Recognition by Company Management
13(p)	Office Climate (Mood / Tone Environment)	13(h)	Desire to Prove Worth

4-8 Year Category		8-12 Year Category	
13(c)	Company Policies, Rules, Etc.	13(c)	Company Policies, Rules, Etc.
13(q)	Physical Work Space (Office Layout/Decor/Size)	13(e)	Compensation via Bonuses
13(t)	Recognition by Peers Outside the Company	13(q)	Physical Work Space (Office Layout/Decor/Size)
13(l)	Having/Obtaining Flexibility of Work Type	13(r)	Prestige
13(o)	Mentoring Relationships	13(t)	Recognition by Peers Outside the Company
13(r)	Prestige	13(d)	Compensation via Benefits
13(s)	Recognition by Company Management	13(s)	Recognition by Company Management
13(y)	Supervisor Management Style / Personality	13(y)	Supervisor Management Style / Personality
13(e)	Compensation via Bonuses	13(u)	Recognition by Peers Within the Company
13(k)	Having/Obtaining Flexibility of Work Hours	13(o)	Mentoring Relationships







12+ Year Category	
13(c)	Company Policies, Rules, Etc.
13(k)	Having/Obtaining Flexibility of Work Hours
13(e)	Compensation via Bonuses
13(q)	Physical Work Space (Office Layout/Decor/Size)
13(r)	Prestige
13(s)	Recognition by Company Management
13(t)	Recognition by Peers Outside the Company
13(u)	Recognition by Peers Within the Company
13(a)	Career Growth / Advancement Opportunities
13(b)	Client Satisfaction

7.0 RAW SURVEY DATA














1. Are you an NSPE Member?

Responses	Total	%	Percentage of total respondents					
Yes	525	82.16%						
No	114	17.84%						
(Did not answer)	0	0%						
Total Responses	639		<table border="1"> <tr> <td>20%</td> <td>40%</td> <td>60%</td> <td>80%</td> <td>100%</td> </tr> </table>	20%	40%	60%	80%	100%
20%	40%	60%	80%	100%				

2. Please designate your area of practice.

Responses	Total	%	Percentage of total respondents					
Construction	46	7.22%						
Government	74	11.62%						
Higher Education	17	2.67%						
Industry	123	19.31%						
Private Practice	350	54.95%						
Other (please specify)	27	4.24%						
Total Responses	637		<table border="1"> <tr> <td>20%</td> <td>40%</td> <td>60%</td> <td>80%</td> <td>100%</td> </tr> </table>	20%	40%	60%	80%	100%
20%	40%	60%	80%	100%				

3. Please designate your discipline

Responses	Total	%	Percentage of total respondents					
Aerospace	4	0.63%						
Chemical	28	4.40%						
Civil	311	48.90%						
Computers	7	1.10%						
Construction Management	3	0.47%						
Electrical	66	10.38%						
Environmental	55	8.65%						
Geotechnical	12	1.89%						
Industrial	5	0.79%						
Mechanical	86	13.52%						
Petroleum	5	0.79%						
Structural	44	6.92%						
Other (please specify)	10	1.57%						
Total Responses	636		<table border="1"> <tr> <td>20%</td> <td>40%</td> <td>60%</td> <td>80%</td> <td>100%</td> </tr> </table>	20%	40%	60%	80%	100%
20%	40%	60%	80%	100%				

4. Please indicate your title/position.

Responses	Total	%	Percentage of total respondents
Engineering Intern (In-Training)	148	23.27%	
Project Engineer	206	32.39%	
Senior Engineer	67	10.53%	
Department Head	32	5.03%	
Office Manager	9	1.42%	
Project Manager	89	13.99%	
Owner	22	3.46%	
Other (please specify)	63	9.91%	
Total Responses	636		20% 40% 60% 80% 100%

5. Please indicate the number of years since obtaining your undergraduate degree.

Responses	Total	%	Percentage of total respondents
0-2 years	88	13.90%	
2-4 years	122	19.27%	
4-8 years	213	33.65%	
8-12 years	182	28.75%	
12+ years	28	4.42%	
Total Responses	633		20% 40% 60% 80% 100%

6. Are you currently licensed as a Professional Engineer?

Responses	Total	%	Percentage of total respondents
Yes	345	53.99%	
I am an Engineer Intern (EI)	218	34.12%	
No	76	11.89%	
Total Responses	639		20% 40% 60% 80% 100%

9. Have you completed a graduate study program?

Responses	Total	%	Percentage of total respondents
Yes	189	29.62%	
No	449	70.38%	
Total Responses	638		20% 40% 60% 80% 100%

10. What level of graduate study have you completed?

Responses	Total	%	Percentage of total respondents
-----------	-------	---	---------------------------------

MS(Engineering)	149	79.68%	
MS(Not Engineering)	7	3.74%	
PhD (Engineering)	4	2.14%	
PhD (Not Engineering)	0	0%	
MBA	26	13.90%	
JD	2	1.07%	
MD	0	0%	
Other (please specify)	9	4.81%	
Total Responses	197		

Multiple answers per participant possible. Percentages added may exceed 100 since a participant may select more than one answer for this question.

11. How many years have you worked for your present employer?

Responses	Total	%	Percentage of total respondents
0-1	105	18.49%	
1-3	194	34.15%	
3-6	142	25.00%	
6-12	115	20.25%	
12+	12	2.11%	
Total Responses	568		

12. Who, if anyone do you supervise?

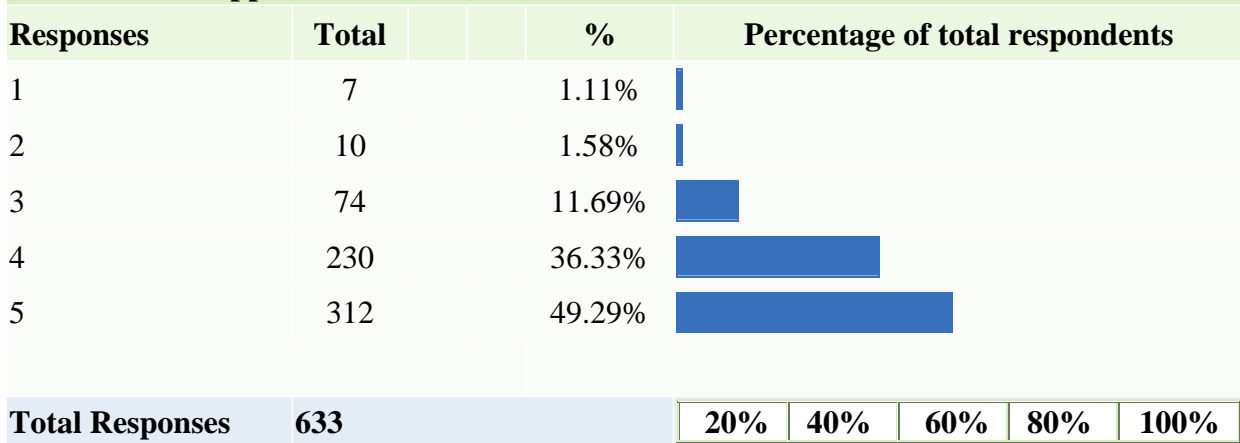
Responses	Total	%	Percentage of total respondents
Administrative Staff	147	23.37%	
Field Personnel	170	27.03%	
Engineering Staff	263	41.81%	
Subcontractors	138	21.94%	
No one	231	36.72%	
Other (please specify)	46	7.31%	
Total Responses	995		

Multiple answers per participant possible. Percentages added may exceed 100 since a participant may select more than one answer for this question.

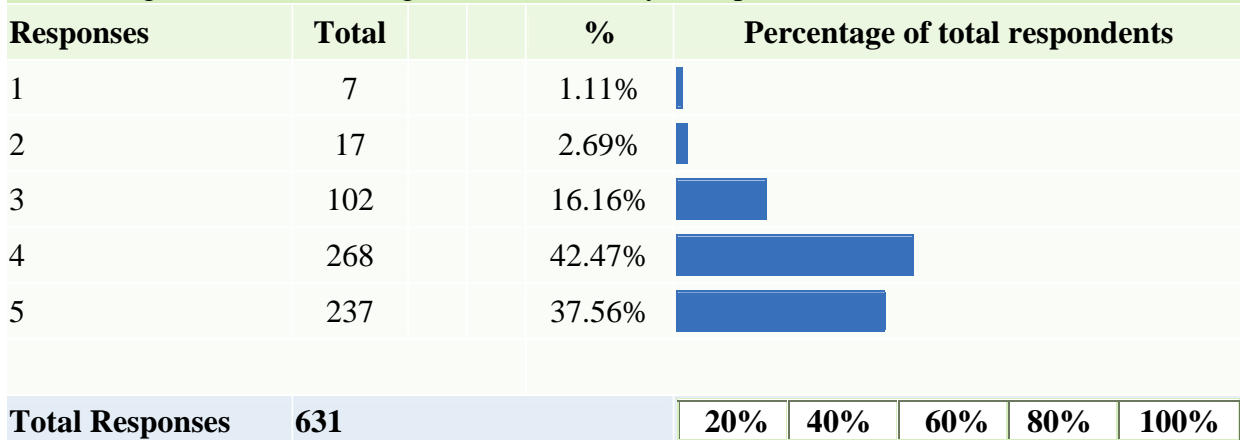
13. Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?

13(a). Please rank the following factors on a scale of one (least significant) to five (most

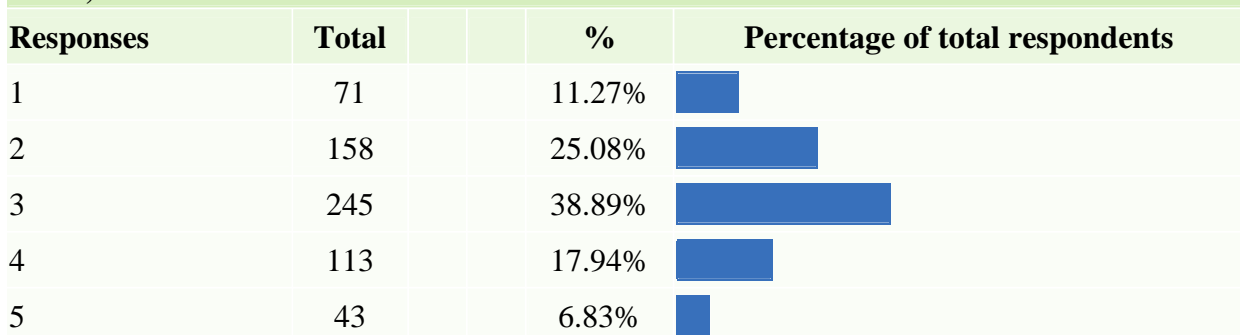
significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Career Growth / Advancement Opportunities**



13(b). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Client Satisfaction**








13(c). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Company Policies, Rules, etc**








Total Responses	630	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------

13(d). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Compensation via Benefits**

Responses	Total	%	Percentage of total respondents
1	22	3.50%	
2	85	13.51%	
3	196	31.16%	
4	226	35.93%	
5	100	15.90%	


Total Responses	629	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------

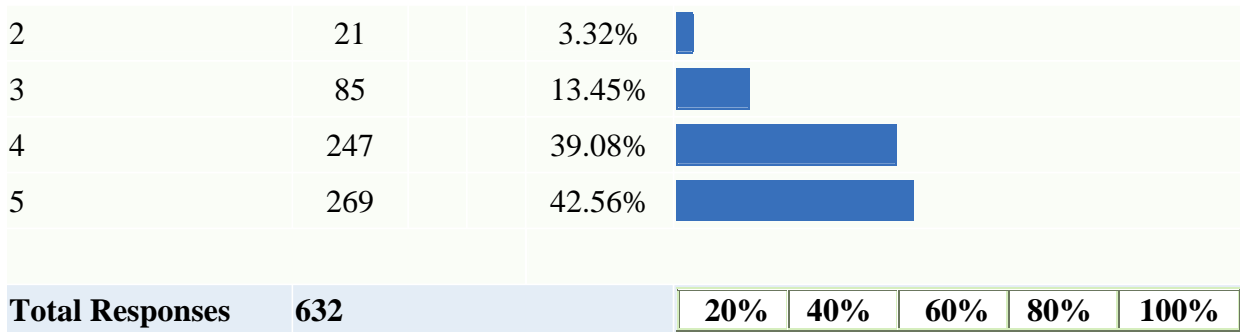
13(e). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Compensation via Bonuses**

Responses	Total	%	Percentage of total respondents
1	49	7.77%	
2	64	10.14%	
3	127	20.13%	
4	224	35.50%	
5	167	26.47%	

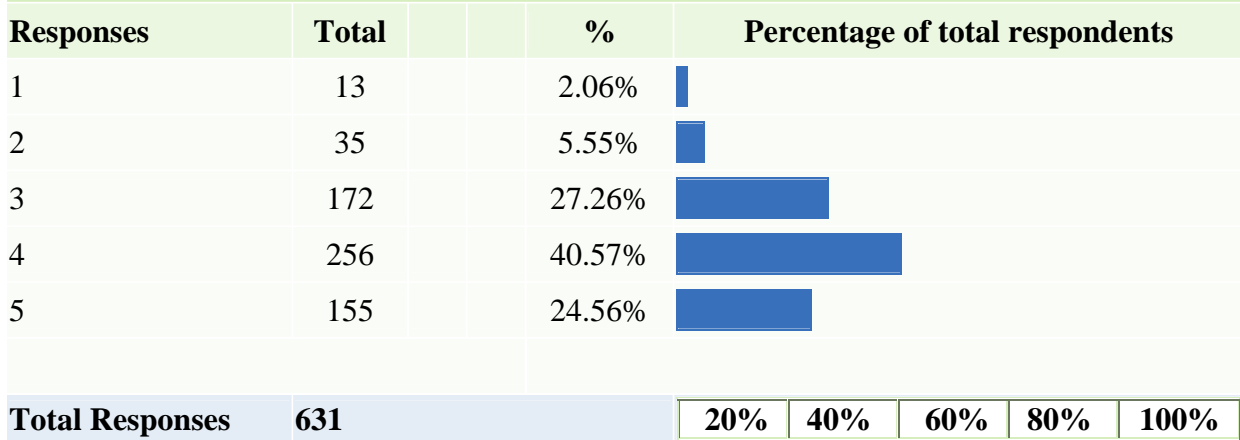
Total Responses	631	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------

13(f). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Compensation via Salary**

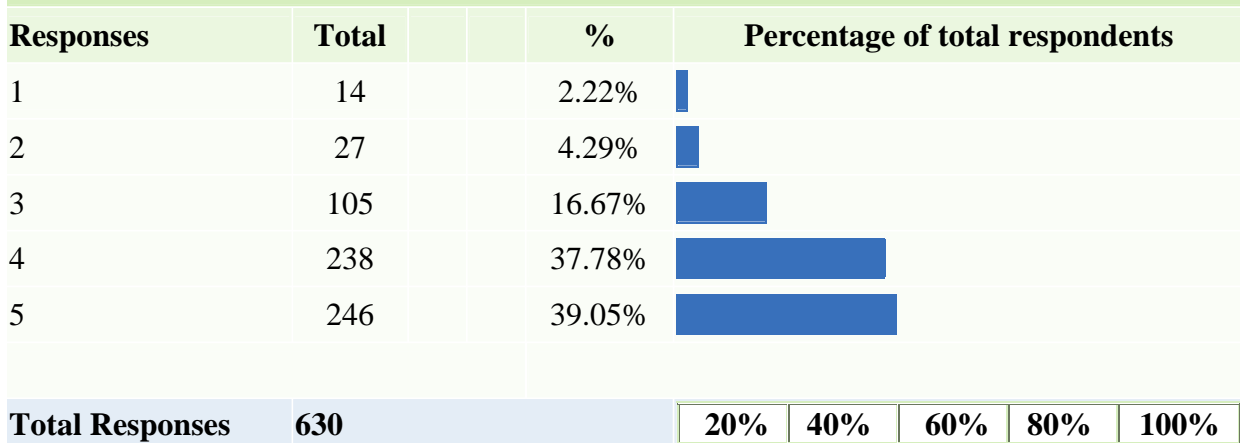
Responses	Total	%	Percentage of total respondents
1	10	1.58%	



13(g). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Desire to enhance public health, safety, and welfare**

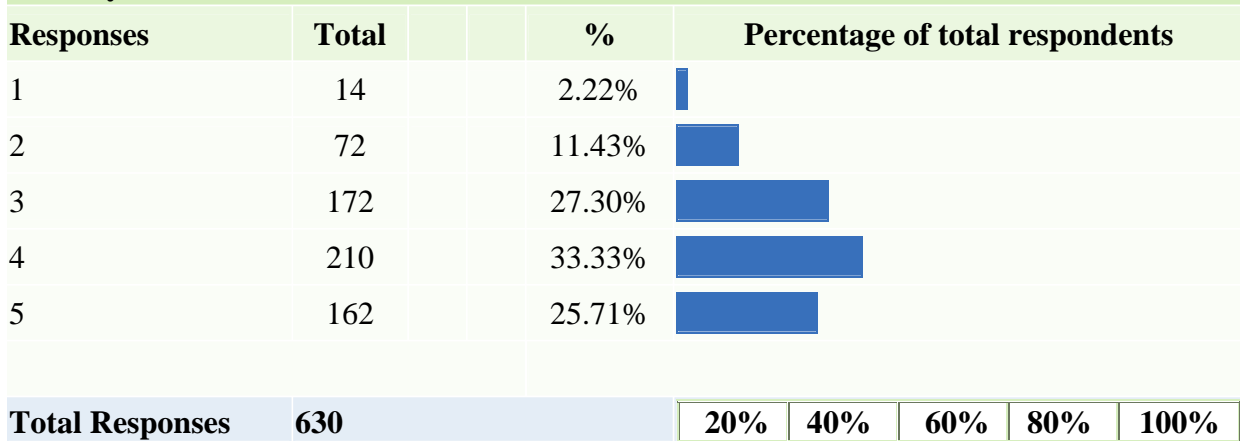


13(h). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Desire to Prove Worth**

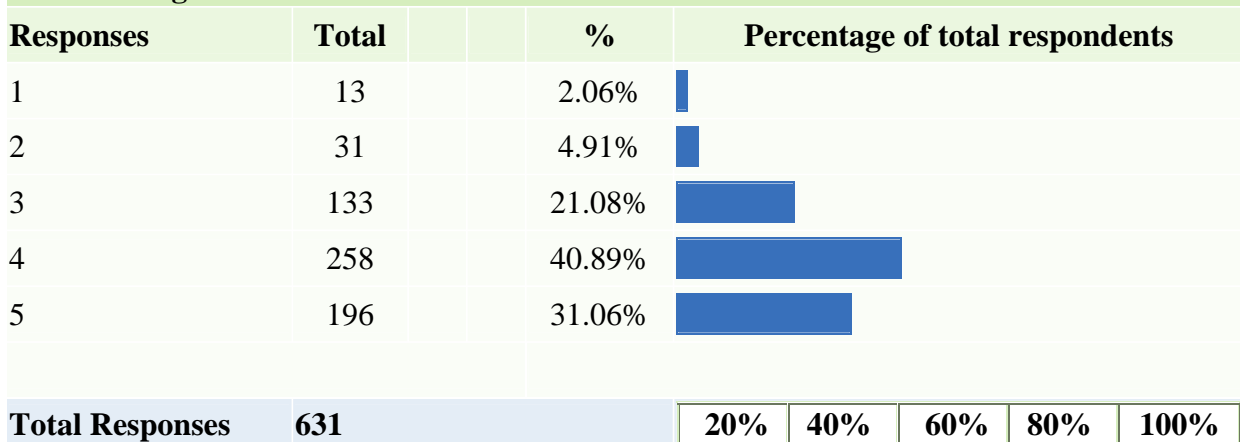


13(i). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words,

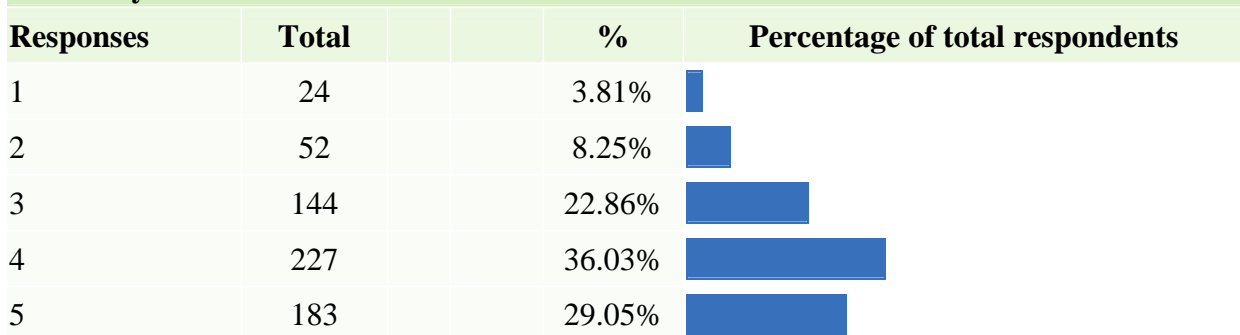
to what degree do the following factors stimulate you to produce results?: **Ensuring Job Security**



13(j). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Gaining Respect from Colleagues**








13(k). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Having/Obtaining Flexibility of Work Hours**








Total Responses	631	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------


13(l). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Having/Obtaining Flexibility of Work Type**

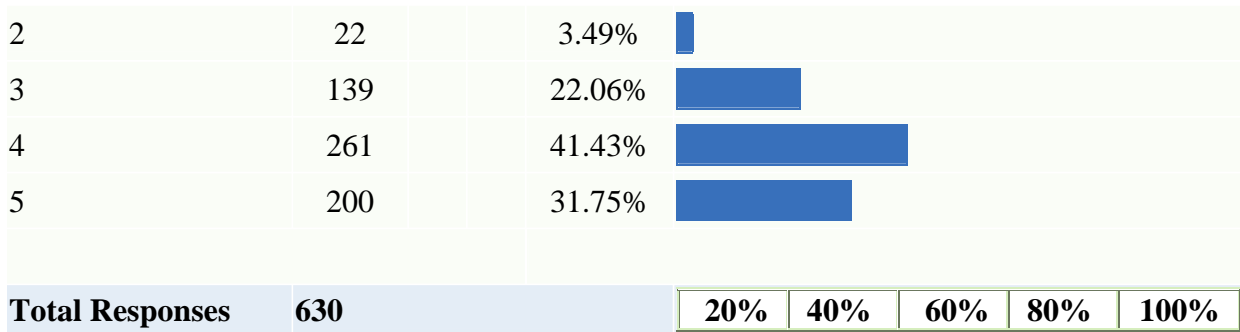
Responses	Total	%	Percentage of total respondents
1	15	2.38%	
2	52	8.24%	
3	183	29.00%	
4	245	38.83%	
5	136	21.55%	
Total Responses	631		20% 40% 60% 80% 100%

13(m). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Interest Level in Job**

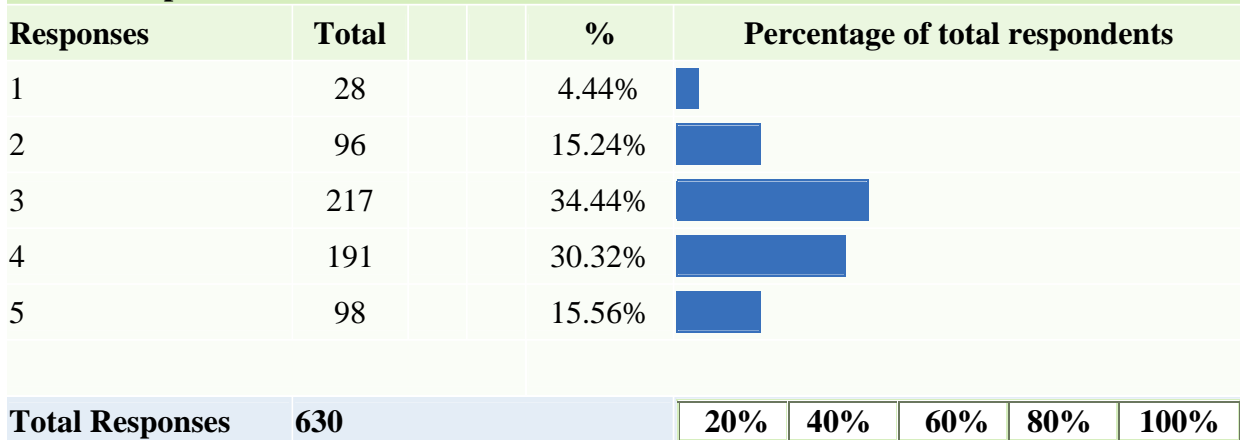
Responses	Total	%	Percentage of total respondents
1	6	0.95%	
2	24	3.80%	
3	85	13.45%	
4	255	40.35%	
5	262	41.46%	
Total Responses	632		20% 40% 60% 80% 100%

13(n). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Level of Responsibility**

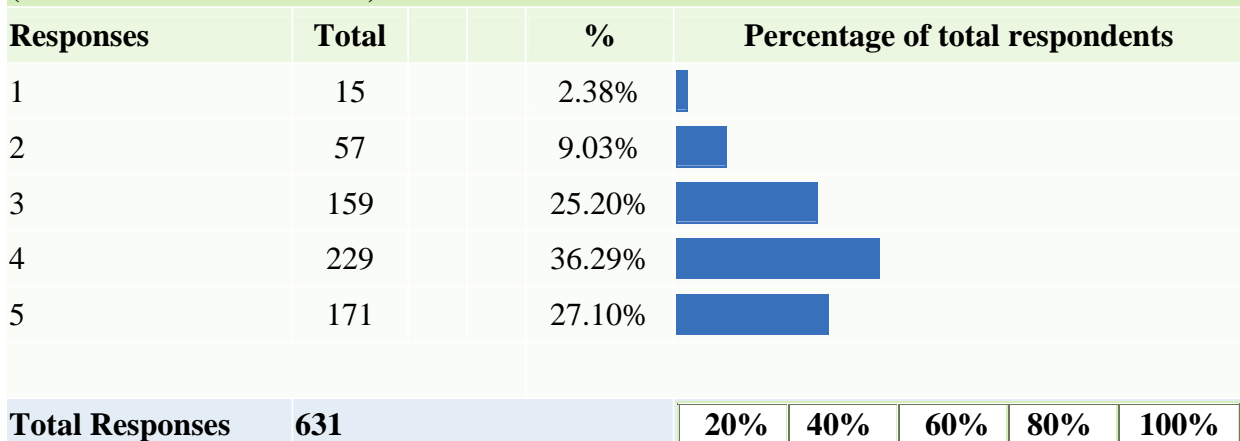
Responses	Total	%	Percentage of total respondents
1	8	1.27%	



13(o). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Mentoring Relationships**

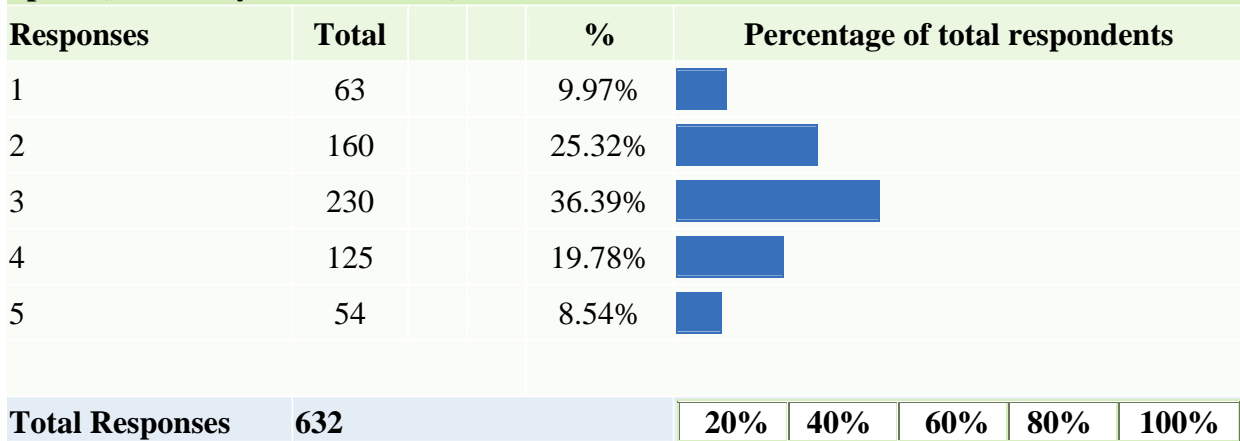


13(p). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Office Climate (Mood/Tone/Environment)**

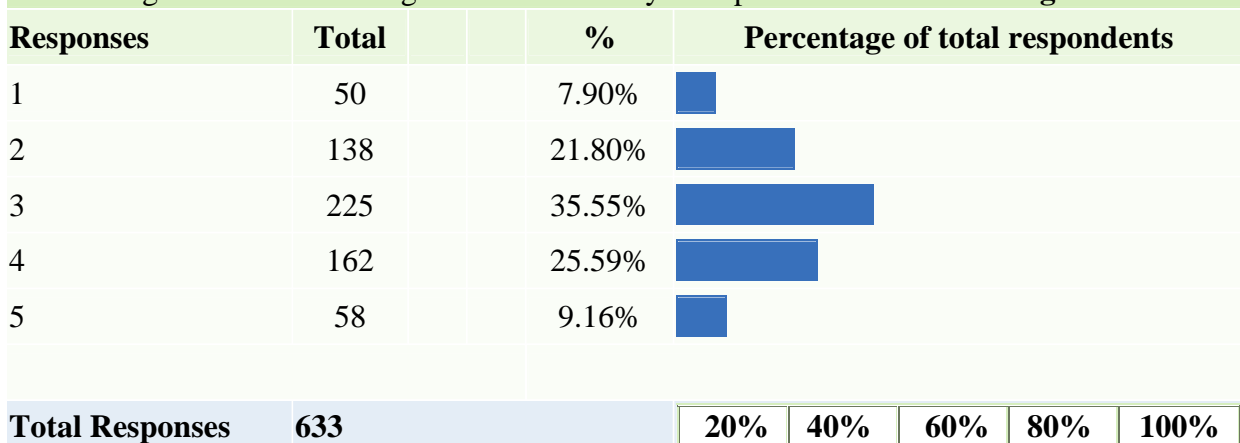


13(q). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words,

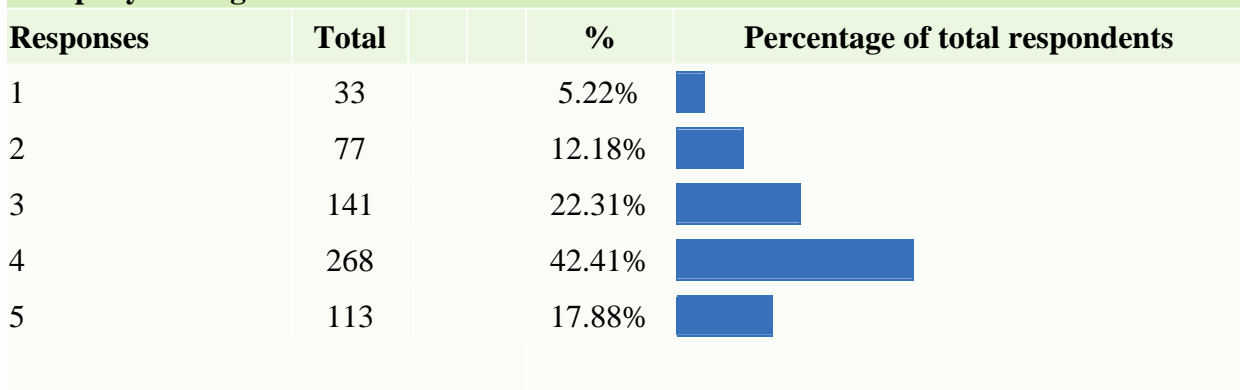
to what degree do the following factors stimulate you to produce results?: **Physical Work Space (Office Layout/Decor/Size)**



13(r). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Prestige**








13(s). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Recognition by Company Management**








Total Responses	632	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------

13(t). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Recognition by Peers Outside the Company**

Responses	Total	%	Percentage of total respondents
1	44	6.98%	
2	107	16.98%	
3	213	33.81%	
4	179	28.41%	
5	87	13.81%	



Total Responses	630	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------





13(u). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Recognition by Peers Within the Company**

Responses	Total	%	Percentage of total respondents
1	22	3.49%	
2	63	9.98%	
3	186	29.48%	
4	256	40.57%	
5	104	16.48%	







Total Responses	631	20%	40%	60%	80%	100%
------------------------	------------	------------	------------	------------	------------	-------------

13(v). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Recognition by Immediate Supervisor**






Responses	Total	%	Percentage of total respondents
1	17	2.69%	
2	36	5.71%	

3	134	21.24%	
4	269	42.63%	
5	175	27.73%	
Total Responses	631		






13(w). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Self Improvement**

Responses	Total	%	Percentage of total respondents
1	7	1.11%	
2	15	2.37%	
3	77	12.18%	
4	263	41.61%	
5	270	42.72%	
Total Responses	632		

13(x). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Sense of Professional Obligation**

Responses	Total	%	Percentage of total respondents
1	19	3.01%	
2	43	6.80%	
3	126	19.94%	
4	232	36.71%	
5	212	33.54%	
Total Responses	632		

13(y). Please rank the following factors on a scale of one (least significant) to five (most significant) with respect to the degree in which they motivate you in your work. In other words, to what degree do the following factors stimulate you to produce results?: **Supervisor Management Style/Personality**

Responses	Total			%	Percentage of total respondents				
1	33			5.23%					
2	68			10.78%					
3	184			29.16%					
4	200			31.70%					
5	146			23.14%					
Total Responses	631				20%	40%	60%	80%	100%



Professional Engineers in Private Practice
Young Engineers Advisory Council
1420 King Street
Alexandria, Virginia 22314
www.nspe.org

NSPE Product Number: 1991
Published: July 2008