Understanding the Impacts of the Aging Population of Code Professionals in Utah

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In Utah, nearly half of currently licensed building inspectors will reach retirement age within the next ten years. This group of aging code professionals possess a level of knowledge and experience not easily replaced. This paper provides strategies for best utilizing the aging population of code professionals in a way that will be most beneficial for the code professional industry, in addition to capturing as much industry knowledge as possible. This study involved an extensive statewide survey of licensed building inspectors in Utah, and collected opinions, concerns, and insights directly from the code professional industry. The findings of this study provide specific retirement projections, potential skills lost, and the impact on small building departments. Industry concerns regarding the future include the need for additional training opportunities, difficulty attracting new entrants, lack of adequate compensation, and the need for more awareness regarding the professional nature of the industry. Finally, the paper proposes strategies for capturing the knowledge of the outgoing generation of code professionals through a combination of phased retirement, modified work duties, and mentoring programs.

Key Words: Code Professional, Construction Regulations, Aging Workforce

Introduction

Code professionals perform the duty of ensuring that buildings are constructed in accordance with applicable construction codes and safety regulations, and therefore play a crucial role within the architecture, engineering, and construction (AEC) industry. The code professional industry is made up of a variety of professionals such as inspectors, plans examiners, building officials and permit technicians. In 2014 the International Code Council (ICC) and National Institute of Building Sciences (NIBS) conducted an industry-wide survey, with responses received from all 50 states and 3 foreign countries (NIBS 2014). The survey participants were asked a series of questions related to age, compensation level, education, professional background, time spent within the industry, and anticipated retirement timelines. This survey appears to have been among the first academically structured investigations into the code professional industry as a whole. The NIBS (2014) survey found that nationally about 10% of code professionals have already reached retirement age, and another 46% will reach retirement age within the next ten years. However, retirement age alone does not strictly account for all planning to leave the industry. 31% of code professionals indicated that they anticipate leaving the profession within five years, and an additional 51% within the next five to fifteen years (NIBS 2014). With the forecast for such a dramatic loss, the purpose of this research was to investigate the specific potential for and impacts of a mass departure of aging code professionals in Utah, and to explore potential solutions for capturing industry knowledge.

Individuals must pass certification exams administered by the International Code Council to become eligible to work as code professionals. Code professionals develop specialized skills and technical expertise gradually over the course of their careers, often a combination of time spent in both the building industry and the code profession (NIBS 2014). Examples of necessary skills include the ability to interpret construction documents, knowing the various building codes and having an understanding of the intent, and ensuring that construction follows code. The pending departure of many of the industry's most tenured professionals will be dramatic unless efforts are made to ensure the next generation of code professionals is adequately prepared to assume responsibility over building safety. Replacing an experienced group of professionals in such a short period of time will require a significant contribution of time and resources. Efforts must be made to transfer knowledge and expertise by strategically utilizing the population of aging code professionals. In order to be effective, sufficient time is needed for the outgoing population of code professionals

to interact and exchange job knowledge with the next generation of code professionals. Failure to respond to this issue will likely negatively affect the code professional industry. A reduction in the number of code professionals, in turn, would likely hamper construction as permitting and inspection processes slow. An inexperienced population of inspectors could lead to lower quality inspections, potentially resulting in rework and other indirect costs. In order to compensate for the inevitable decline in the number of code professionals, the industry must actively pursue new entrants, and make efforts to retain the services of current code professionals for as long as possible.

Research Methodology

To better understand the effects of a code professional shortage in Utah, a statewide survey of code professionals was conducted to quantify age demographics and projected retirement timeframes. The survey consisted of 16 short questions with conditional branching, meaning the number and type of questions varied based upon a person's response to each question. The survey included multiple choice questions regarding age, time spent working within the code professional industry, specific job roles, and preferred retirement models. An open ended question was used to capture local concerns related to the state of the code professional industry in Utah. The survey was distributed to 512 out of the 615 actively licensed inspectors in Utah. Survey participants were selected through a convenience sample based entirely on the number of licensed building inspectors with valid accessible email addresses. A total of 303 survey participants responded, representing over 49% of the total population. This response rate resulted in a confidence interval of ± 4%, providing an accurate representation of the code professional industry within Utah.
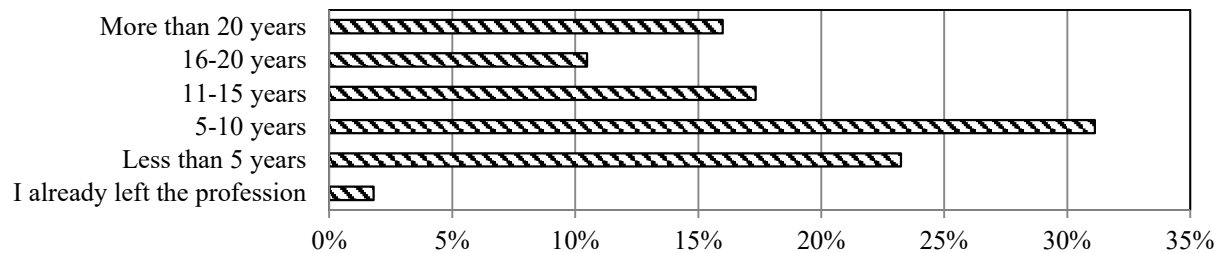
Findings

The age distribution of code professionals in Utah obtained in this research was similar to the national demographic of code professionals (from NIBS 2014). Figure 1 shows that 46% of the local industry is made up of individuals over the age of 55, compared to 56% nationally, illustrating that Utah employs a slightly younger age demographic. This suggests that the local industry may have slightly more time to strategically respond to the approaching wave of retirements and allow for more purposeful training and mentoring programs to be implemented. Less than 10% of current code professionals are under the age of 35. In a specialized industry where experience is of utmost value, the lack of younger code professionals is a concern. The growth trends shown in Figure 1 seem to indicate that many code professionals do not enter the industry early in their careers, and ultimately leads to the disproportionate population in the 55-64 age range. However, using the survey information regarding work experience, professionals in this age range in Utah still had on average over 20 years of experience in the code professional industry. This represents a significant amount of industry experience, and before these experienced professionals exit the industry, additional code professionals must be found, obtain necessary qualifications, and receive training and mentoring.
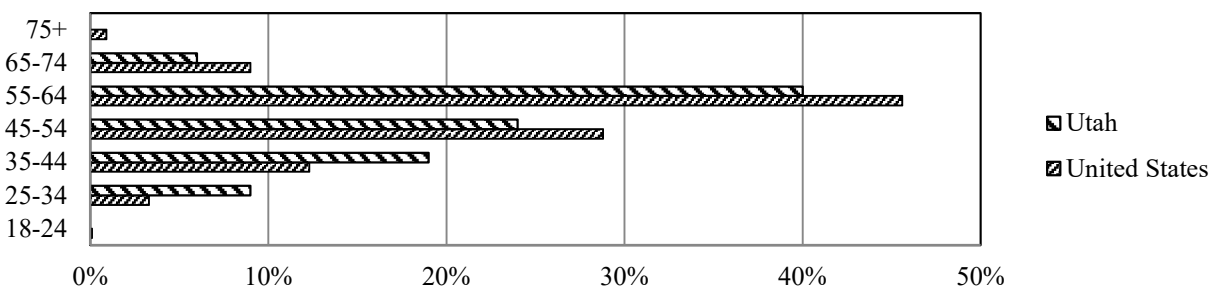
Figure 1. **The age distribution of code professionals.**

Age is not the only determining factor when projecting industry departure rates. As shown in Figure 1, many code professionals remain in the industry beyond the typical retirement age of 65. To establish a more accurate projection of retirement, survey participants were asked when they planned on exiting the industry. The results of this survey question are shown in Figure 2. Over 73% of the respondents indicated that they plan to leave the industry within 15 years. This is slightly less than the 82% planning to exit the industry nationally (NIBS 2014), but still an alarming number. Based on the current population of 615 licensed inspectors, the projected losses within 15 years may include

451 licensed inspectors. With a national population of approximately 41,000 code professionals with ICC certifications, this would represent a potential loss of 33,000 certified professionals. These figures outline the magnitude and urgency associated with code professionals leaving the industry.


Figure 2. **Projected time for industry departure.**

The current influx of new code professionals does not appear to be sufficient to meet the outgoing demand. The industry is focused on finding and attracting new entrants and continues to stress this need amongst its members (NIBS 2015). Such efforts are warranted and necessary, but only provide a partial solution, as new entrants will require substantial on the job training once they have entered the industry. Little emphasis has been made on ensuring that the next generation receives sufficient training, or more importantly who will provide such training. As a result, additional efforts must be made to prolong the careers of experienced code professionals in order to provide a strategic, gradual departure and allow time for valuable mentoring and one-on-one training to occur.

Job responsibilities

Part of this research involved not only quantifying the number of code professionals that would be leaving the industry and projecting when these losses would occur, but also determining what specific skills might be lost. In the national study (NIBS 2014) participants were asked to identify all of their applicable roles within the industry, which resulted in an unclear determination of specific job responsibilities. In order to understand the local code community, the survey asked participants to identify their primary role within the industry (see Figure 3). The intent of this question was to identify their principal day to day responsibilities. A majority of respondents indicated that their primary roles were building officials and commercial inspectors. However, feedback regarding this question suggested that selecting a single role within such a complex and diverse industry was difficult. The data still suggests that involvement in residential inspections, residential plan reviews and commercial plan reviews generally occur as a secondary job function. Additionally, this data also indicates that a fairly equal distribution of code professionals exist between those over and under age 55 regardless of primary responsibilities, signifying a reasonable level of continuity.
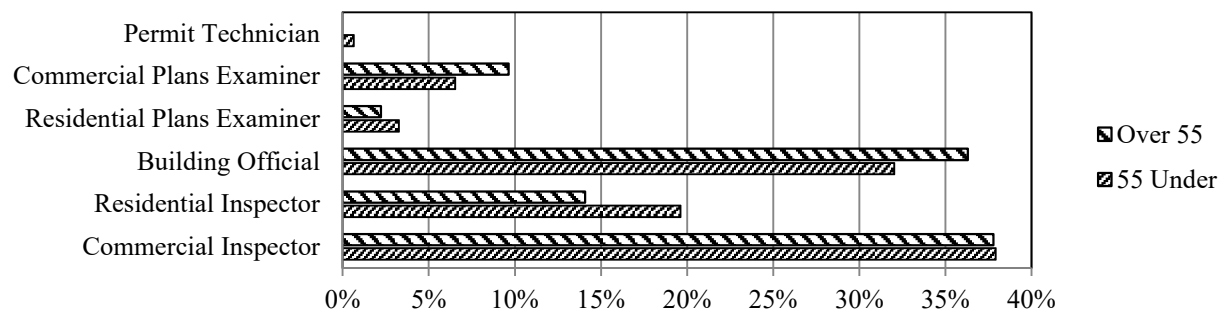
Figure 3. **Dispersion of principal job role.**

Impact on small communities

The State of Utah has 242 municipal governments (U.S. Census Bureau 2007), of which only 11 have populations in excess of 50,000 residents (U.S. Census Bureau 2011). As a result, a vast majority of building departments service

small communities and consist of a limited number of people. Small populations do not always indicate a low level of construction activity, so the survey asked participants to indicate the size of the building departments they work in. Of those who responded to the survey, 51% worked in building departments consisting of only 1-4 people. An additional 14% worked in departments of 5-7, 15% in departments of 8-10, and 20% in departments of more than 10 individuals. This data shows that the majority of code professionals work in small departments. These small departments will be dramatically impacted by the retirement of staff members, as each individual represents a large percentage of the total staff. Small building departments have very little elasticity, and are generally only minimally able to temporarily absorb the workload of any one individual. In some cases, due to difficulty in hiring code professionals, some municipal governments have elected not to replace outgoing code professionals due to a perceived ability of the remaining professionals to maintain the workload. With the volume of projected departure approaching, this does not appear to be a sustainable practice.

As most of Utah is made up of small communities, any proposed response to the mass departure of code professionals must also be viable for small building departments. Small communities are less likely to have the time, personnel and other resources to train inexperienced code professionals. Small building departments require versatile and competent professionals, as each individual fulfills multiple crucial roles. There are many roles that exist in the building department, which in small communities are filled by only a few individuals. It could be argued that larger departments are better suited for training younger professionals; however, only a limited number of these larger departments exist. This challenge of finding and training new professionals for smaller departments is not new, but might be magnified by the increased demand for code professionals. With limited budgets, smaller communities are less able to absorb the costs associated with training new code professionals. As a result, they may only be able to afford such training costs for short durations of time; however, training the next generation of code professionals may take a considerable amount of time.

When asked to estimate how long new hires would need to obtain a state issued combination inspection license, 70% of the local industry indicated a period of 1-3 years and an additional 17% responded with a period of 4-5 years. Training the next generation of code professionals will be a length process requiring foresight, planning and a substantial investment of resources. However, this data also indicates that there is sufficient time to utilize the experienced professionals to actively participate in this training process. Although all building departments will face these types of challenges, it seems that smaller building departments will require a more strategic approach.

Industry concerns regarding the future

There is likely no better group from which to solicit solutions to the problems that face the industry than the current body of code professionals. In an effort to gather the ideas of local code professionals this research solicited opinions and feedback from participants related to the future of the Code Professional Industry in Utah. A total of 101 of the research participants provided responses. This section discusses the concerns that were repeated most frequently.

The primary concern of the industry revolves around the need for additional training opportunities and programs (Table 1). Those working in the industry appear to understand that local governments are reluctant to fund training opportunities, and seldom facilitate training and mentoring new code professionals. As a result, the industry appears to be looking for outside sources to provide such training. It seems that trade schools, colleges, and universities preparing individuals to pass the ICC certification exams would be a logical source of additional training. However, another question in the survey asked participants to identify the source of the next generation of code professionals. In this study a total of 60% of the survey respondents expect the next generation of code professionals to transition from the construction trades, 18% from technical and vocational schools, 10% suggested that municipalities will simply train from within, and 8% from community colleges. Only 3% of survey respondents expect future code officials to be university graduates. This suggests that the industry believes the future source of code professionals will continue to originate primarily from the construction trades. However, there is also a common industry sentiment that experience in the trades alone will not serve as adequate training. This may further suggest that the transition from the construction trades to the code professional industry is becoming more difficult due to the growing complexity and continued evolution of codes and regulations. Additionally, it would seem that experience in a single trade provides a limited scope of experience, whereas a majority of code professionals require expertise in multiple trades. Regardless of experience in the construction trades, the industry is also suggesting that additional training is necessary to obtain licenses and certifications.

Table 1.

Summary of industry concerns regarding the future.

Percent	Industry concern
28%	Reinforced the need for additional training opportunities and programs
27%	Acknowledged the current lack of qualified individuals
24%	Highlighted the need for the industry to attract new entrants
24%	Stressed the need for increased public and government awareness regarding the industry
23%	Voiced complaints regarding need for higher salaries
18%	Expressed concerns regarding supply vs. demand in the industry
6%	Expressed negative views toward ICC and the certification processes
4%	Shared concerns regarding inadequate staffing of building departments by municipalities
4%	Recognized trends in the industry towards third party providers
3%	Expressed concerns regarding appropriate code cycle durations
3%	Shared opinions related to a lack of unity within the industry
3%	Voiced concerns with respect to a lack of soft skills/intangible skills within the industry
2%	Complaints regarding permit fees staying in the building department
1%	Voiced concerns regarding a need for flexible work schedules

The second most common response acknowledged a lack of qualified individuals available to hire (Table 1), suggesting that the industry is already experiencing the initial effects of losing experienced professionals. This concern was reinforced by those voicing issues with supply and demand (Table 1). Together, the lack of qualified individuals available to hire and the associated supply and demand concerns suggests that open positions are going unfilled. Also, others specifically commented about inadequate staffing levels within building departments (Table 1). This could be effected by a limited availability of qualified professionals, or also potentially understaffed building departments. These three common responses suggest that challenges related to hiring qualified individuals will continue to grow.

The industry appears to have been able to attract a sufficient number of code professionals in the past with minimal effort. However, many respondents voiced concern that the industry needs to actively attract new entrants (Table 1), suggesting that additional efforts will be required in order to replace the outgoing generation of code professionals. The industry must be able to compete with other disciplines within the construction industry in terms of compensation, job security, benefits and working conditions. Many respondents reported a need for higher salaries (Table 1). Another apparent challenge commonly attributed to a lack of interest in the code professional industry is associated with becoming a certified code professional. Finally, other survey respondents expressed negative views towards the International Code Council and the certification process in general (Table 1). Obtaining certifications and state licensure are seen by many within the industry as a deterrent to attracting interested individuals. These ideas indicate that attracting new entrants into the code professional industry will require a combination of better outreach programs, compensation packages, and efforts to help new entrants to qualify for necessary certifications and licensure.

Another commonly expressed theme suggested the need for increased government and public awareness with respect to the industry as whole (Table 1). An increase in awareness of the code professional industry may lead to greater exposure to potential new entrants, and increased support from local governments to sufficiently staff building departments. This increased awareness must include an understanding of the value provided by code professionals. The need for increased government awareness is valid, as many municipalities appear to only have a marginal understanding of the importance of code compliance, the complex nature of the industry, and specialized training requirements. Increased awareness must come through a collaborative effort from individual code professionals, local code and trade organizations, as well as industry leaders on a national level.

Potential Methods for Capturing Industry Knowledge

The approaching retirement of the baby boomer generation has been anticipated for many years. The construction industry is not immune to the inevitable retirement of its workforce. Being that the approaching retirement of the baby boomer generation cannot be stopped, possible solutions include delaying retirement, adjusting job duties to

accommodate older workers and flexible work schedules to encourage phased retirement (Silverstein 2008; Arnone 2006; Burtless and Quinn 2002). The following sections outline potential methods of most effectively utilizing aging population of code professionals, and explore the affect these alternatives might have on the industry as a whole.

Delaying retirement

Many researchers have concluded that the current workforce may need to stay on the job longer, and postpone retirement in order to soften the pending losses of large numbers of skilled professionals (Silverstein 2008; Arnone 2006; Burtless and Quinn 2002). The number of people planning to put off retirement beyond the age of 62 rose nationally from 35% in 1998 to 55% in 2004 and is likely increasing (Silverstein 2008). Delaying retirement may alleviate current needs within the code professional industry; however, such actions must be accompanied by efforts to find, train and employ the next generation of code professionals. Such a delay could potentially alleviate an abrupt loss of professionals and allow the industry to adequately respond to the potential crisis through additional training programs, mentoring and recruitment efforts. Based on this research, it appears that a sizable population of post-retirement age code professionals exists and will continue to grow. Survey responses indicated that 9% of code professionals over age 55 planed on remaining in the industry beyond retirement age. The value in delaying retirement comes from the opportunity this creates for the industry's most experienced professionals to personally train the next generation of code professionals. An extended period of overlap between the new generation of code professionals and the outgoing generation would be of great value, as knowledge could be exchanged and hard-earned lessons could be passed on.

Phased retirement

The National Institute on Aging conducts a Health and Retirement Study every two years. The study has consistently shown that three out of every four older workers have said they would prefer to reduce hours gradually rather than retire abruptly (Silverstein 2008). Studies have shown that only 11% of companies are considering hiring retirees as consultants or contractors, or using on-call pools of retirees (Arnone 2006). The code professional industry must be creative in finding methods for allowing a phased retirement, such as flexible hours, part-time contracts, as-needed contracts, and similar methods of ensuring that those retiring still have viable options to contribute to the industry. Based on this research, only 15% of licensed inspectors work for a third party provider. This suggests a limited market for part-time or contract code professionals. However, as the industry continues to lose professionals, opportunities in the third party market may grow. In addition, Utah law prohibits participants of the state retirement system to resume working for local government for a period of one year following retirement (URS 2014). This appears to be a hurdle if the industry desires to extend the careers of the retiring code professionals. By limiting their ability to reenter the industry, age will become the determining factor when it comes to retirement plans. Age projections suggest a very abrupt loss of professionals (see Figure 1). If efforts can be made to extend the careers of even a portion of each age demographic, a more gradual transition into the next generation of code professionals could be achieved.
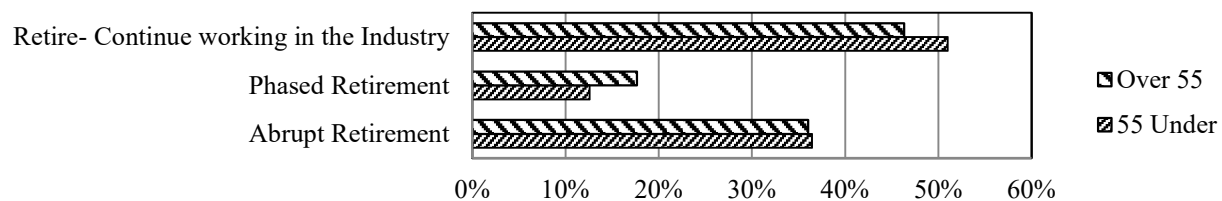
Figure 4. **Preferred options for retirement.**

As part of the state-wide survey the industry as a whole was asked what form of retirement they would prefer (see Figure 4). The results show that regardless of age, those in this industry overwhelmingly support a retirement option that allows them to continue working in the industry after retirement. On the contrary, only 36% of those surveyed preferred an abrupt retirement. If the industry can adjust to a model that enables retired code professionals to continue to contribute in their later years, an opportunity exists to capture much of the knowledge and expertise they possess. In addition, survey respondents who indicated that they preferred to retire yet continue to work in the industry were asked how many hours they would prefer to work. All of those surveyed indicated that a part-time work schedule

consisting of 10-30 hours per week would be desirable. This result provides a basis for local governments to design employment opportunities that meet the needs of this aging population.

Modified job duties

Code professionals have a wide variety of job duties. This research has indicated that code professionals continue to engage in all aspects of the industry regardless of age. As people age, cognitive capacities gradually diminish, although there is no clear cut formula to determine to what extent or at what point in life it will occur (Silverstein 2008). In order to best utilize the current population of older code professionals and encourage them to remain in the workforce beyond retirement age, it will likely be necessary to adjust job duties according to their abilities. For example, a code professional may transition from performing field inspections to examining plans. Studies have concluded that performing multiple tasks or holding multiple items in working memory are especially sensitive; however, many functions are "crystallized," which means they are effectively preserved with age (Silverstein 2008). The job duties of code professionals often involve complex thought processes and memorization of thousands of individual code sections. Although it may seem that these tasks would be vulnerable to the effects of age, it is not unusual for code professionals to continue to work well into their 70's, suggesting a similar "crystallization." For example, in Utah there are currently 18 individuals over the age of 70 that have active licenses. This suggests that code professionals can be retained well beyond retirement age and that delaying retirement is a viable option. In order to retain older code professionals, slight modifications to their job duties may be necessary. Although the cognitive functions may be intact, the physical duties of code professionals may exceed the capacity of some older workers. The American Association of Retired Persons (AARP) suggests that if employers are to reap the benefits of the work ethic and experience of older workers, they must design the workplace of the future to meet their needs (Silverstein 2008). This applies to the code professional industry as inspection duties such as climbing scaffolding, entering crawl spaces, and walking steep pitched roofs are not typically conducive to an older work force. Studies have concluded that workers in poor health, or who work in physically demanding jobs are typically first to retire (Burtless and Quinn 2002). There are many aspects of the code professional industry that are not physically demanding, and through modifying job duties the industry could extend the careers of many of its older professionals. The NIBS (2014) survey concluded that a majority of code professionals perform a combination of inspection, plan review and administrative duties. As a result, a move towards more specialized and strategic roles within building departments may be necessary to fully utilize older workers beyond typical retirement age.

Mentoring and training

Few trends are as predictable and irreversible as the aging of the American population. Researchers have examine how organizations respond to their aging workforces and how they plan on transferring "business wisdom" defined as "value that is uniquely derived from experience alone" (Arnone 2006). As the code professional industry plans for the future, there is much "business wisdom" that will be lost through the pending mass retirement; this type of phenomenon is also referred to as talent gap or brain drain (Arnone 2006). The code professional industry is in great need of programs that facilitate the mentoring of younger workers. Many code professionals primarily work alone and relatively unsupervised; as a result the opportunities for more experienced professionals to pass along "business wisdom" to less experienced professionals is very limited. The cost of training the next generation of code professionals will likely be substantial. While entry level employees result in lower compensation costs, the decrease in productivity during training can result in substantial cost increases (Arnone 2006). In the code professional industry, providing avenues for the exchange of industry knowledge will involve a large amount of one-on-one training, both within the building department as well as in the field. Capturing the knowledge of experienced code professionals will be best accomplished through personal interaction between the mentor, and the pupil. In most cases this will result in two professionals completing the work normally performed by a single individual. With such training comes an increase in cost and a decrease in productivity; however, this must be viewed as a necessary short term cost, and an investment in the future.

Conclusions

The code professional industry in Utah will inevitably face a significant regeneration within the next 10-15 years, primarily due to an aging population of code professionals soon to exit the industry. This could be as high as 73% in

Utah and over 80% nationally over the next 15 years. Many of these are amongst the industry's most skilled and experienced professionals, adding to the challenge of finding equal replacements. The industry must respond quickly and appropriately to ensure that sufficient quantities of certified, licensed and trained professionals are available to replace the outgoing generation.

As the industry prepares for its future needs, data shows that a majority of code professionals in Utah are employed by small jurisdictions and working in building departments consisting of 1-4 people. The approaching mass departure of code professionals will be acutely felt by smaller jurisdictions, which due to limited resources will likely have difficulty finding qualified professionals, providing adequate training, and absorbing the workload of outgoing professionals. The industry is aware of the need for new entrants, and has made it clear that additional training opportunities are needed. The primary challenge appears to be developing the necessary skillset, which involves obtaining necessary certifications and licenses. This must occur through a collaborative effort between educational institutions, the construction trades, and members of the code professional industry. The initial key is to prepare individuals to pass the ICC certification exams. Once certified and licensed, additional training and mentoring is needed to capture industry knowledge, and advance code professionals to a level of expertise comparable to that of the outgoing generation. This can only be accomplished through strategic planning as efforts must be made to extend the careers of many of the industry's most experienced professionals through delayed or phased retirement, modified job duties and emphasizing the need for mentoring of less experienced professionals. Extending the careers of the outgoing generation will enable additional time to train less experienced professionals, pass along industry knowledge, and secure sufficient numbers of qualified professionals. This solution will likely lessen the impacts on the AEC community of the pending mass departure of code professionals.

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