Arboriculture & Urban Forestry 2024
https://doi.org/10.48044/jauf.2024.008

Motivations and Barriers of Professional Certification for Tree Workers

By Jason S. Gordon and Arnold "Beau" Brodbeck

Abstract. Background: Professional credentialing refers to the process of obtaining a certification or license that validates an individual's knowledge, skills, and abilities according to industry-accepted ethics and standards. The International Society of Arboriculture (ISA) confers and manages professional arborist certification as well as other arborist credentials. However, many communities, such as in the southern United States, have few if any credentialed commercial tree care professionals. This study explores the motivations and barriers commercial tree care workers place on professional arborist certification. Methods: The research employed 60 qualitative interviews from 3 of the 8 southern states to elicit emergent themes and detailed understanding of participants' attitudes and experiences. In addition, an online survey of 742 international respondents was conducted to validate and complement interview findings. Results: Results illustrate degrees of professional interest in certification. For example, some arborists pursued certification to improve sales with government organizations, while both certified and noncertified participants suggested few clients were aware of certification and therefore did not consider certification valuable to market competition. Additionally, company cultures supporting professional development and engagement with professional organizations influenced certification among new employees. Finally, some arborists viewed certification as a pathway to increase knowledge, skills, and confidence in arboriculture. Others discussed difficulties in traditional education and testing required for certification. Conclusion: The reasons for pursuing certification were as diverse as the tree care workers in the industry. Findings suggest several possible interventions to address the challenges some individuals have in achieving certification.

Keywords. Arboriculture; Certification; Commercial; Credential; Tree Care.

INTRODUCTION

In 1992, the International Society of Arboriculture (ISA) introduced the Certified Arborist® (CA) credential. This professional arborist certification, hereafter referred to as certification, requires proof of skills and knowledge based on experience and education related to the field. In turn, it arguably legitimized the profession of arboriculture for a broad range of tree workers, including those not formally educated in relevant academic disciplines (Elmendorf et al. 2005). Like credentialing systems in other professions, CAs must complete continuing education to maintain certification (30 credits every 3 years; ISA 2024a). Continuing education programs (offered by ISA, the Tree Care Industry Association, Cooperative Extension, and many others) include review and clarification of concepts and techniques, while also introducing professionals to the most current arboriculture science and fostering professional ethics. A credential such as arborist certification is intended to provide several benefits to holders, including (Gramling and Myers 1997):

- Enhanced credibility: Professional certification validates an individual's expertise and knowledge in a particular field.
- Job requirements: Many employers prefer or require applicants to have professional certification for certain roles.
- Personal and professional growth: Earning a professional certification demonstrates a commitment to ongoing learning and professional development, which can help individuals stay current with the latest trends, techniques, and best practices in their field.
- Higher earning potential: Professional certification can lead to higher salaries and earning potential.

- Standardization: Professional certification helps establish a standard for knowledge and expertise in a given field, which can help ensure quality services and adherence to ethical and safety standards.

However, for every Certified Arborist, there are likely many more green industry workers without tree-relevant credentials. These workers consist not only of individuals who spend the majority of their time in tree care, but also landscapers and others who spend a portion of their time pruning and removing trees. This lack of credentials is especially prevalent in certain regions of the United States, often more rural regions, such as the US South. Unqualified tree workers who do not have essential tree care knowledge and skills, and do not keep up with technical innovations in tree care practices, can negatively influence tree health, thereby shortening longevity and the overall value of the ecosystem services provided by this resource (Vogt et al. 2015). Because many communities likely have an under-supply of credentialed tree workers or no credentialed tree workers at all, professional organizations have an opportunity to recruit and attract more tree care workers to become certified and therefore operate safely within industry-accepted ethics, standards, and practices. In the US South, as in other areas, this opportunity assumes an urgency as the region contains a rapidly growing urban population (US Census Bureau 2023).

In some industries, professional credentialing is mandatory, as is the case with lawyers, medical doctors, architects, and foresters in some regions, or voluntary as is the case with tree care industry professionals. In commercial tree care, certification typically involves meeting certain requirements such as a given amount of field experience, an educational degree, and/or passing an exam. ISA's Certified Arborist credential requires a passing score of 76% on a comprehensive exam focusing on 10 key arboriculture dimensions, from tree biology to worker safety (ISA 2024a). Eligibility to take the exam requires 3 years of full-time arboriculture experience or a combination of education and experience.

Prior to ISA certification, college degrees (typically 2- and 4-year forestry, horticulture, landscape architecture programs) were the main formal qualifications for entering the field of urban forestry and professional arboriculture, with many tree workers not having any credential past high school (Elmendorf et al. 2005). While some large companies offered in-house training for employees, ISA's Certified Arborist program enabled a broad spectrum of tree workers to prove their competency and adopt standards of practice. The introduction of the Certified Arborist credential was a timely professional movement to differentiate and legitimize the skills of professional tree care workers from that of natural resource managers and landscape maintenance activities (Coder personal communication 2023). Additionally, arborist credentialing has been associated with improved safe work practices for tree workers and has created an increasing culture of safety in the industry (Julius et al. 2014).

Previous research has acknowledged the need for qualified professionals in the diverse fields of urban forestry and arboriculture. Doherty et al. (2000) and Miller et al. (2015) described how trained utility and municipal arborists were associated with improved tree maintenance along right-of-ways. Although the authors did not explicitly address certification, they discussed the importance of credentialing, particularly to ensure the professionals had up-to-date knowledge. Further, Bardekjian (2015) examined how arborists must address policies and regulations, labor markets, home life, and other factors in their work environment. In this qualitative study, all of these factors affected arborists' safety (psychological and physical), wellbeing, and likely their decision-making in professional attainments such as credentialing (Julius et al. [2014] also discussed safety in the work environment, which led many participants to support mandatory licensing). Moreover, despite the benefits of voluntary certification through ISA, the unregulated trade of arboriculture fostered entry into the workforce of tree workers who failed to follow safety standards or ethical environmental and business practices.

Other authors have more directly assessed the perceived value of arborist or urban forester certification. Dahle et al. (2020) focused on employers' preferences for entry-level urban foresters, finding that many employers valued some certifications and licenses more than accredited degree programs. Day et al. (2022) asked respondents if they supported a new urban forestry credential (58% were government workers compared to about 11% private industry respondents, and 9% in consulting). Most respondents (65%) agreed an urban forestry credential was necessary and desired. Respondents with positive

attitudes about certification considered it a competitive edge and important to career advancement as well as maintaining competency. Those with negative attitudes towards certification tended to be late in their career (or retired), felt their current credentials and/or experience were sufficient, or thought the certification would not benefit their situation. Besides these two studies, little is known about attitudes towards credentialing in the tree care industry. Specifically, there is a lack of information on commercial tree care workers who provide management to the vast and mostly privately owned urban forest.

In contrast to the tree care industry, several peer-reviewed articles have addressed certification in the healthcare, technology, and various engineering sectors. In nursing, for example, increased earning potential is a commonly referenced benefit to certified practitioners (Byrne et al. 2004; Robinson and Mee 2004; Grief 2007). In one study, the difference in hourly wages between Certified Registered Nurses (CRN) and uncertified nurses was between US $0.50 and US $1.00, with bonuses of up to US $3,000 for some CRNs (Grief 2007). In addition, Piazza et al. (2006) and Grief (2007) suggested credentialing in nursing indicated a sense of accomplishment and professional growth, which was associated with recognition by the professional sector.

Similarly, certification in the safety, health, and environmental (SH&E) industry has been associated with higher salaries as well as personal satisfaction and empowerment (Adams et al. 2004). Studies in the information technology (IT) field found certification significantly contributed to education and recruitment of employees, because many employers perceived more value in specific, applied skills related to certification than acquired through a formal degree (Segalla et al. 2001; Bartlett et al. 2005). Along with education, potential employers used certification as an indicator of an applicant's qualifications because they possessed incomplete information about the applicant (Bartlett et al. 2005). In the same industry, Eggert (2001) noted certification was not considered an adequate substitute for a 4-year degree, but credential maintenance was key to the quickly evolving world of IT. Reflecting Dahle et al. (2020), certification was also a bridge between higher education and industry (Eggert 2001).

One way to think about the benefits and constraints regarding certification is from the perspective of external (extrinsic) and internal (intrinsic) drivers. Beneficial professional and career impacts of certification are external motivators or rewards (Byrne et al. 2004). Such impacts are external to the individual and can be defined by other individuals, society, or the environment. Examples of external motivators include increased wages, promotions, and other recognitions (Robinson and Mee 2004). External constraints or barriers, by contrast, are limitations external to the individual that prohibit attaining or maintaining certification. Examples of external barriers could be lack of time or financial constraints (Grief 2007). Perceptions of clients' attitudes towards certification in terms of demand and business marketing would be considered either external motivators or barriers in the tree care industry.

As expected, internal motivations and barriers are the psychological impacts that come from within the individual (Byrne et al. 2004; Piazza et al. 2006). Internal motivators consist of factors like professional growth, empowerment, confidence in abilities, pride, increased sense of self-esteem and accomplishment, and other intrinsic rewards (Piazza et al. 2006). By contrast, internal constraints would include lack of knowledge, self-doubt, indolence, tiredness, and fear of failure, among others. Internal motivators and barriers are important to personal development and self-concept (Byrne et al. 2004).

This study sought to understand why some commercial tree workers become certified (motivations) and why others failed (barriers) to pursue or maintain certification. We focused on commercial tree workers, rather than municipal or utility personnel, because the commercial sector comprises a substantial portion of the field with both certified and uncertified workers. The qualitative portion of this study focused on 3 states in the US South, while an online survey included respondents from the US and other countries. As a way of describing and understanding motivations and barriers, we organized results around internal and external factors. It is important to note this study was not intended as an economic analysis of market value of certification. While we gathered information from tree care workers about their perceptions of client demand, we did not explicitly assess market demand.

METHODS

We report findings from qualitative interviews and an online survey. The survey drew from interview data to examine quantitative explanations of the research

questions. Interview data provided context for the survey results as well as demonstrated how various barriers and motivators were intertwined.

Interviews

The initial study design was limited to a qualitative analysis within a portion of the geographic designation of the International Society of Arboriculture Southern Chapter, while an international online survey was added to the project after the qualitative component. The 3 states selected for the qualitative component—Georgia, Tennessee, and Alabama—were geographically proximate and within driving distance for the researchers. Researchers employed semi-structured face-to-face interviews to explore the study questions (Creswell 2013). In each state, at least 10 interviews took place in an urban area with over 100,000 residents (of which at least 5 were Certified Arborists and 5 were non-certified tree care workers) and 10 interviews occurred in one area with under 100,000 for a total of 60 interviews in the 3 states. The sample assumed sales competition would be higher in larger cities, resulting in stronger opinions supporting certification compared with smaller cities. Participants were identified through local arborist associations and search engine results for firms' web sites. Additional sampling used a combination of opportunistic and snowball sampling methodologies (Creswell 2013). Although we targeted at least 20 interviews per state and ultimately found convergence or recurrent themes in the analysis (Patton 1990), the sample was not intended to statistically reflect the labor statistics of the diverse types of employment among tree workers (Table 1).

Table 1. Employment and arborist certification in the study area (May 2022; ISA 2024b; USBLS 2023).

Occupation (SOC* code)	Alabama	Georgia	Tennessee
Landscaping and Groundskeeping Workers (373011)	10,550	21,990	16,600
Tree Trimmers and Pruners (373013)	700	1,420	1,090
ISA Certified Arborists®	92	339	182

*SOC = Standard Occupational Classification code used by the US Bureau of Labor Statistics. Various occupations could include Certified Arborists, but these are the most directly relevant occupations.

Finally, each investigator analyzed the data independently to help ensure internal validity. Guided by the literature, interview questions included:

1. Why did you get into tree work?
2. Are you satisfied with the work you do?
3. Do the employees at your firm participate in professional organization activities?
4. Are you certified?
5. Have you ever considered pursuing ISA certification?
6. What motivated you to become certified?
7. Do you think that certification replaces or complements educational aspirations?
8. Do you market your certification? How?

Data analysis utilized a combination of analytic induction and thematic analysis (Patton 1990) after interviews were transcribed (analysis was informed by field notes and post-interview reflection). Using a concurrent and iterative process, we evaluated every new experience articulated by participants based on a short list of tentative codes developed as they emerged from the first 10 interviews (Glaser and Strauss 1999). As analysis proceeded, additional codes were developed and compared with preceding codes, and the initial coding scheme was revised and refined (Glaser and Strauss 1999). Both authors analyzed the transcripts and met to discuss the data and agree upon codes with an 80% acceptable measure of agreement (Morse et al. 2002). At the conclusion of all interviews, coding among all transcripts were compared to observe for any bias in coding. Relationships among categories were identified and developed into themes, and themes were compared within and across cases. To prepare for reporting the findings, exemplars for each code, category, and case were identified.

Online Survey

The online survey sample frame consisted of several email lists. One list was purchased from a private marketing firm. Emails from this list ($n = 3,262$) were associated with the primary addresses of green industry firms in the 8-state footprint of the ISA Southern Chapter (excluding Puerto Rico and the US Virgin Islands). Contact information was collected according to North American Industry Classification System (NAICS) codes, which are not exact in identifying tree care companies across all relevant codes. As

such, the survey initiated with a filter question asking if the respondent was a commercial tree care provider (not employed by a utility, municipal, or nonprofit organization). In addition to the list, a survey invitation was distributed through email list serves, including the ISA Southern Chapter and Auburn University's Raising Trees Webinar Series (date unknown), which included emails from around the world. As such, we sought to maximize the number of survey responses rather than obtain a statistical representation of commercial tree care providers.

The remainder of the survey questionnaire reflected the interview instrument (Appendix). Respondents were asked if they currently or previously held the CA credential. Depending on their answer, they were asked what prevented them from becoming certified with 16 possible responses including an open-ended option. Two separate questions asked what influenced their decision to become certified and why they dropped certification. Finally, they were asked about their influences for maintaining certification with 6 possible responses including an open-ended option. Respondents selected all answers that applied for these 5 questions.

Designation of each variable as internal or external and a motivator or barrier was a subjective decision of the authors based on Byrne et al. (2004). Background questions included: (1) number of employees in their company (from 1 to 100); (2) tenure in the industry (from 1 to 100); (3) highest level of education (high school or less, 2-year/associate's, technical degrees, 4-year degree or more); and (4) percentage of time spent in tree removal, pruning, or all other services (from 0 to 100 for each category).

The survey resulted in 742 respondents (Table 2). Of those, 49% self-identified as commercial tree care providers, with 266 certified at the time of the survey, 13 who were previously certified, and 82 not certified. Sixteen commercial tree care providers were based outside of the US. The responses showed that 26% percent spent more than half their time conducting tree removals, 77% spent more than half their time pruning, and 34% spent more than half their time in other services besides removals and pruning.

Regarding company size, 49% percent of commercial tree care providers worked in firms from 1 to 5 employees, 15% worked in firms of 6 to 10 employees, and 36% worked in firms of over 10 employees; 38% had worked in the industry for up to 15 years, while 23% had worked for 16 to 25 years, and 39% had worked for more than 25 years. For their highest level of education, 63% had at least a 4-year degree, 19% had an associate's, 2-year, or technical degree, and 18% had a high school degree or less.

Table 2. Commercial tree care respondent characteristics (361 of 742 survey respondents).

Variable	Percent of commercial tree care workers
Certified at time of survey	74
Previously certified but dropped	4
Not certified	23
Based in the USA	95
Services (at least 51% of time)	
Tree removal	26
Pruning	77
All other services	34
Size of firm	
1-5	49
6-10	15
Over 10	36
Tenure in industry (years)	
15 or fewer years	38
16-25	23
25 or more	39
Highest level of education	
High school degree or less	18
Associate's, 2-year, or technical degree	19
4-year degree or more	63

RESULTS

Motivators to Certification

External Motivators

Certified survey respondents selected external drivers 343 times (41%) compared with 481 (58%) for internal drivers (Figure 1). For staying certified, they cited external reasons 36% of the time ($n = 695$)(Figure 2). Of those who had been certified in the past, but no longer were, 12 survey responses were external influences while 25 were internal influences. Relative to survey responses, interview participants seemed to more strongly suggest certification was motivated by employer requirements and/or incentives. Credentials

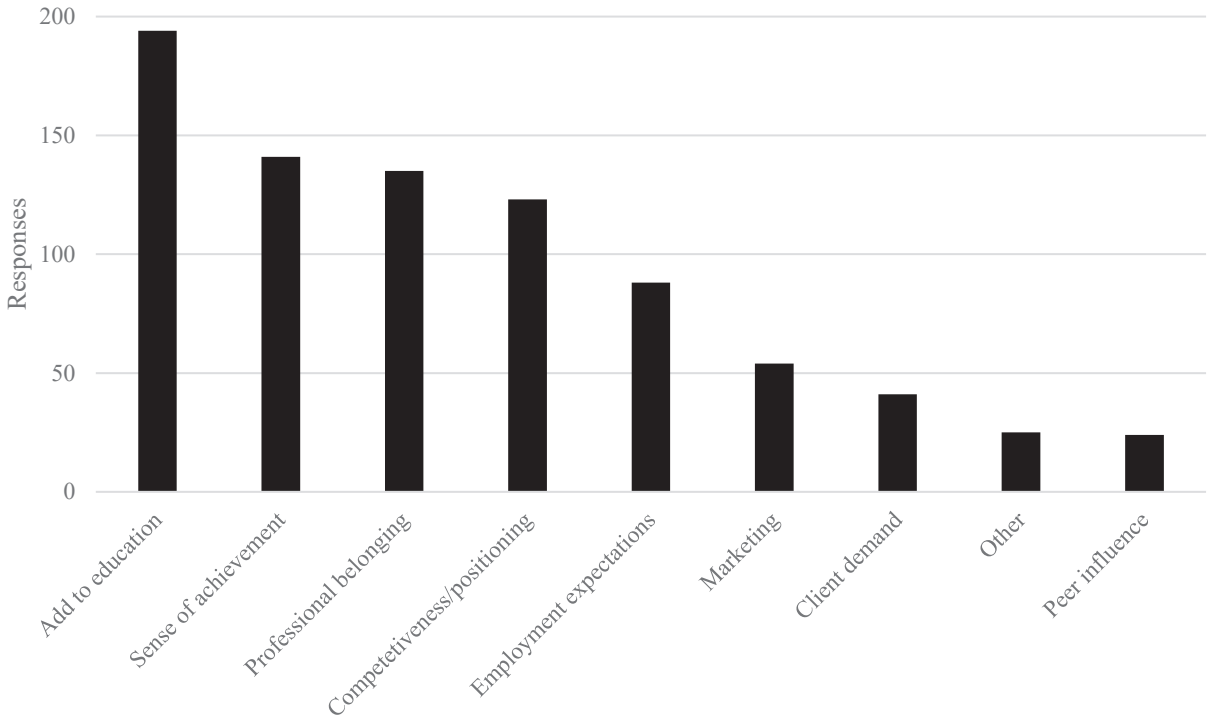

Figure 1. Motivations for obtaining certification.

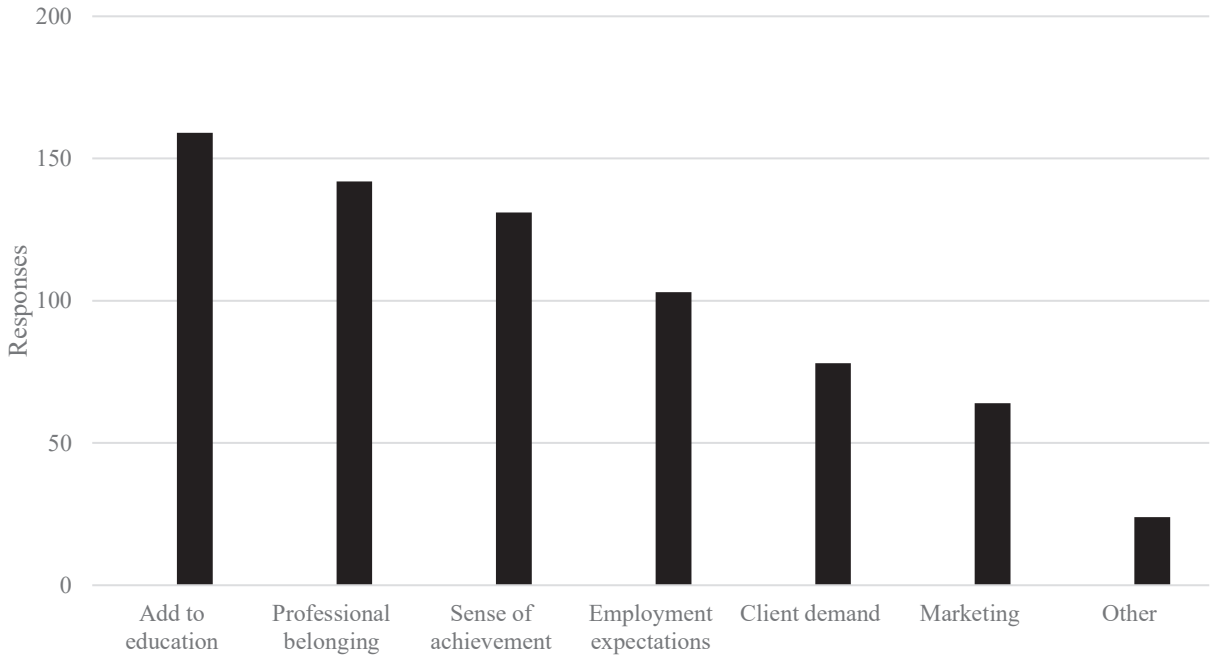

Figure 2. Motivations for staying certified.

were needed to access employment opportunities and improved compensation within the company. One survey respondent commented, "My company offers a raise for ISA certification." Certification towards advancement was particularly important in large and established firms in the interview sample, with supervisors or sales personnel required to hold certification.

Participants, particularly from smaller tree care companies, saw certification as a pathway to diversify the firm's arboricultural services. This was reflected in the survey with competitiveness/positioning being the most common external motivator (but still only cited 15% of the time compared with internal motivators). Some described certification as a way to create additional revenue streams and grow their business. Participants noted certification allowed them to justify high-cost alternatives to clients. They argued it helped validate employees' knowledge, which was necessary to offer services outside of tree removals or basic pruning. As one uncertified arborist who worked mostly in tree removals explained:

> *There was a guy that was working at another company, and I saw him drilling into the side of the tree and putting these little plastic capsules in the side of the tree. I asked "What are you doing?" He told me fertilizing the tree. Anyway, wheels started turning and I had some questions about that. Certification became an option at that point. I then got the book and just started studying…Today [after becoming certified] we do any kind of pruning, removal, plant health care needs, and a lot of that, fertilizing, and disease diagnosis, treatment. Pretty much anything to do with the woody plant tissues, we handle it.*

Other participants viewed certification as a late-career option to avoid the more physically demanding aspects of tree work as they aged. Certification helped create opportunities for consulting and moving away from the more physical elements of tree work. As noted by a non-certified tree worker who aspired to certification, "I can't remove and prune trees forever, it's hard work! I want to start working in tree health care…I need credentials for that." This was especially true for the smaller businesses with the owners actively engaged in most aspects of the business.

Interview participants often discussed the influence of mentors or peers within the tree care industry (although only a minor factor in the survey results, with peer influence the least cited motivator at 3%). Mentor and peer influences were exhibited in two ways in the interviews. First, within companies, owners encouraged employees to pursue certification. Participants described increased job satisfaction as employers paid certification expenses (e.g., exam registration and study materials) in addition to approving attendance at continuing education events. According to participants, certified arborist-owned companies were more engaged in professional organizations compared with companies owned by non-certified arborists. Second, while less common, company owners reached out to new, and often younger, competitors and invited them to educational events, industry meetings, or made themselves available to answer tree-care or business questions. In either case, mentors encouraged certification to improve their qualifications, development, and greater professionalism in the industry. One participant said:

> *[Name withheld] came to me and he said, "Hey, we have an event at a local urban forestry conference; you should come"…It was pretty eye-opening. At that time, I didn't even know what an arborist was. Then shortly thereafter, [name withheld] started saying, "Hey, we'd like to give you some work for the city, but in order to do it, you've got to be a certified arborist." From there it opened a lot of doors.*

Participants generally did not claim their certification was driven by economics, with survey respondents citing marketing (7%) and client demand (5%) infrequently for becoming certified. Similarly, reasons for staying certified constituted only 11% of responses for client demand and 9% for marketing. However, interview participants did describe certification as providing credibility in a competitive market. One participant described certification as an attractive but inessential enhancement that pushed some clients to contract one firm over another, all else equal. As one arborist noted when discussing hiring professionals: "Certification overcomes a psychological barrier for clients hiring [the professional]." They said certification was also a tool to separate and market themselves as professionals from the numerous companies who might offer services that do not conform to industry standards.

Another external motivator for certification was access to municipal contracts. Several arborists noted that they had either sought or were seeking certification

to enable access to work on city-owned trees. Underscoring this, a non-certified tree worker said:

> *If all the cities around here were to say, "If you wanna bid on our work, you gotta be this." That would make it where we'd want to do it [become certified] because we like working for the cities. But right now, they're [contracting with] anybody with any type of insurance, with any type of anything.*

Ordinances and other regulations pushed some participants to pursue certification even when there was not substantial client demand. Similarly, interviewees noted that certification was an important credential to access contracts with other professional green industry companies (e.g., landscape architects and developers) that prefer or require certified arborists on their projects for credibility.

Internal Motivators

Both survey and interview participants who were certified at the time of the survey were primarily motivated by internal motivators to obtain certification. Interviews and the survey (26% of 824 responses) demonstrated certification as a supplement or substitute for formal education as a primary motivator. Participants felt they lacked relevant knowledge or wanted to strengthen their existing knowledge and skills. Notably, participants generally did not argue that certification was equivalent to an academic degree, but a recognition of accumulated knowledge. As one arborist noted, "[Certification is] definitely an extension of my education. I wasn't as serious about school like my brother, but getting certified kind of fills that void." Similarly, participants whose career or education had previously been in another industry described certification as forcing them to acquire the knowledge needed to enter arboriculture.

Similarly, continuing education as a requirement of maintaining certification was cited as a key internal motivator (23% of survey responses) for staying certified. Interview participants appreciated the ongoing learning process linked to emerging research and industry-accepted standards. One participant said:

> *I appreciate all that I've learned [since becoming certified]. It motivates me to keep learning new things, not only because we have to get credits, but because I talk with other professionals in the field who I learn from.*

This quote reflects a sense of achievement and enjoyment of learning that was not necessarily associated with receiving formal education through degree programs. Instead, certification provided opportunities for the participant to learn from peers.

Interviewees also discussed a sense of professional belonging as a motivator, reflecting 20% of motivation responses in the survey. Arborists described in various ways how they were cardholders in a "club" that instills pride in being part of a group. Professional belonging contributes to a sense of self and the collective. It involves being proud of one's job activities as well as the actions of peers. As one arborist put it: "I'm part of a profession; this is bigger than just me." Others saw certification as a way to distinguish themselves as professionals from non-certified tree workers, not for economic reasons, but for identity, pride and peer recognition. They discussed certification (and the associated education) as "look[ing] down my nose at all those other guys." These internal motivators are powerful forces for individuals who see arboriculture as a career or profession compared to simply an occupation that pays the bills.

Barriers to Certification

External Barriers

External barriers, which received 42% of survey responses ($n = 136$) to the question asking about what prevents respondents from becoming certified, were largely defined by economic factors (Figure 3). Participants noted that few, if any, clients asked if they were certified when contracting services. Certified arborists complained that clients failed to recognize arboriculture as a profession with standards, best practices, and ethics. Certified arborists said they brought their credential to the attention of the client and educated them on its value and the value of proper tree care. Still, many struggled to differentiate themselves from other tree workers. One certified arborist noted:

> *When you get into Alabama, people don't care. Anybody can cut their tree; anybody can work on their tree. Anybody can prune their tree, and if you ride around and look, it's obvious who did it.*

This assessment was confirmed by uncertified interview participants. They reported few external factors motivating them to apply, study, and take the exam, let alone maintain continuing education credits. As one uncertified arborist put it, "Mostly for

around here, you're a tree cutter…They just want the best, cheapest number, right?" Meanwhile, certified arborists argued that clients could not always differentiate quality of work. This lack of knowledge explained why they did not prioritize quality tree work over lowest cost, timeliness of job completion, and leaving landscapes in good condition.

Uncertified interviewees also noted they received their work from client referrals, which were not influenced by certification. These uncertified tree workers claimed to have sufficient work without having to employ certification in their marketing. This is likely a result of successful client referrals. As one uncertified tree worker commented:

> *When I took over the company, I thought I was gonna need Montgomery to Atlanta [as a market], but I can't catch up staying here…So that's why [I do not pursue certification]. It's 'cause we can't even keep up in the area.*

These external barriers were associated with a perceived lack of economic opportunities through certification and highlighted by survey results. Market factors (e.g., having enough business without being certified [15%] and lack of client demand [12%]) were the most cited external barriers.

Participants described additional external barriers, also economic in nature. For example, some interviewees were dissatisfied with ISA: "I'm not going to give ISA any money." These participants resented what they perceived to be a disingenuous offering of an increasing number of credentials so the credentialing organization could generate revenue (arguably, this could be interpreted as an internal psychological barrier). They expressed anger over the investment required to obtain and maintain these credentials. Other participants respected ISA, but said the exam was too expensive and/or renewal was too expensive. Of survey respondents who dropped certification, most cited the expense of certification renewal and failure to attain required continuing education credits as reasons for dropping certification (both 21%)(Figure 4).

Less important external barriers included not having sufficient practical experience required to register for the exam and perceiving the exam was not relevant to their tree care activities. Regarding the latter, one respondent wrote: "I plan to take the exam, but the material is not all directly relevant to my job as a pruning climber - so if I'm going to spend time reading/studying, I focus on what is related to my work." It is also important to note that several respondents seemed to confuse attaining a Board Certified Master

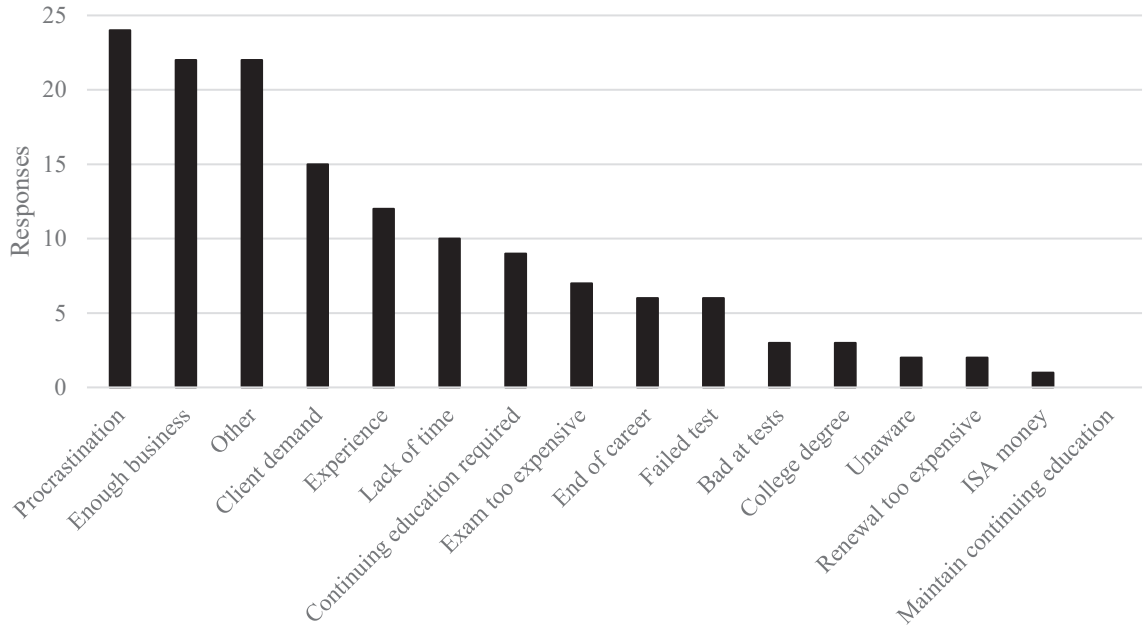

Figure 3. Barriers to becoming certified. The majority (23%) of the Other responses addressed lack of time; 4 (18%) of the Other responses addressed ISA's experience requirement.

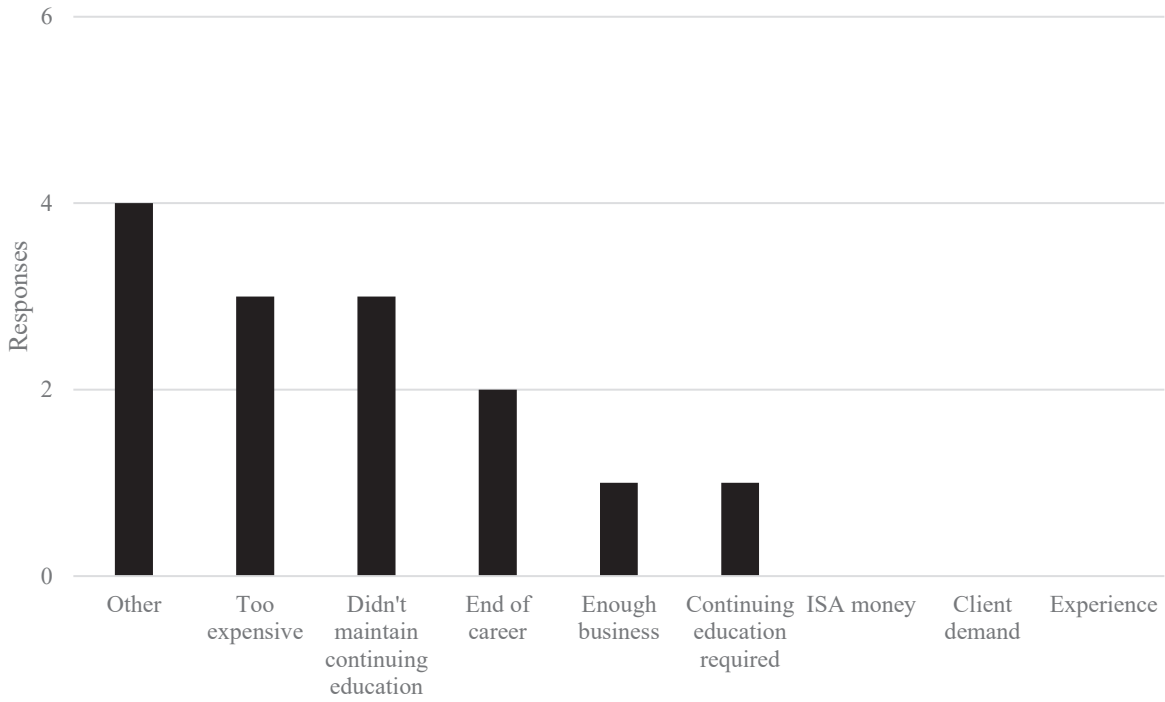

Figure 4. Reasons for dropping certification. Two of the Other responses concerned adding a BCMA credential.

Arborist® (BCMA™) credential with discontinuation of the Certified Arborist credential, citing the BCMA as the reason why they dropped certification.

Internal Barriers

In the survey, internal barriers were cited more often than external barriers for not obtaining certification, with internal barriers selected 58% of the time ($n = 136$) (Figure 3). Among interview participants, one of the strongest explanations for not obtaining certification was that their extensive experience in the industry precluded the need to become certified. This reasoning was often linked to the external barrier of having enough customers without certification. Conversely, none of the survey respondents who dropped certification cited experience as a barrier.

Survey and interview participants who were not certified reported not getting around to taking the exam (17% of survey responses) and a lack of time (10% of survey responses, including coded Other responses) as key internal constraints to certification. Few interview or survey respondents cited the requirement of maintaining continuing education credits as barrier. Despite these similarities between the two sets of results, few survey respondents citing test anxiety or difficulty studying as deterrents compared with interview participants, although survey respondents said the exam cost was problematic.

Interview participants extensively described challenges in testing ability, prioritizing study, or failing the exam. Difficulty with studying demonstrated concerns about self-efficacy. For example, one participant said, "I've never been very good at studying; I have poor concentration and can't keep focused for very long when I read, especially a textbook." Others admitted to having learning disabilities and long histories with shortfalls in traditional academic settings. Some of these participants suggested the barriers making exam preparation difficult, such as hyperactive behavior, made them good at their job.

Correspondingly, some interview participants acknowledged having test anxiety or stated they were not good test-takers. They described the ISA exam as intimidating, even when they had a lifetime of knowledge: "Why did I not show up [for the exam]? I just don't do exams. It's a lot of stress," was the reason why one non-certified tree worker never took the exam. Testing anxiety was often exacerbated by poor academic histories. This anxiety contributed to not prioritizing studying and procrastinating sitting for the exam.

Finally, participants frequently discussed having excessive workloads and not having time to study. Some of these participants expressed interest in becoming certified, but stalled, in some cases for years, in the study process due to lack of time: "I've been in business for 35 years, but just never had the time [until 2 years ago]," noted one arborist who finally became certified due to a new requirement for certification to bid for municipal contracts.

DISCUSSION

Our results reflected previous research in urban forestry and other industries with Certified Arborists generally considering certification beneficial (see also Dahle et al. 2020; Day et al. 2022). Those who viewed certification as beneficial were usually motivated by internal drivers, particularly certification as an extension of their education regarding tree care (Figure 5). This was explained both by the process of studying for the exam as well as pursuing continuing education credits. This finding was not unexpected because arborists, regardless of educational level, commonly enter the industry with limited knowledge and skills. Arboriculture is inherently a field that requires learning through experience. Similar to Segalla et al. (2001) and Bartlett et al. (2005), applied skills related to certification were held in higher esteem than a formal degree.

For some participants who cited exam anxiety or difficulty studying, certification may have served as a badge that replaced the traditional academic degree (a similar finding was reported by Eggert [2001]). Adding to education as a primary motivation may also suggest that many participants enjoyed life-long learning which, over the course of a career, helped to mitigate the monotony of some daily activities. On the contrary, having many years of experience was cited in interviews and the survey as a reason for not attaining certification (Figure 6). Again, the finding proposes that experience with industry-accepted practices may hold the most merit among professionals, regardless of formal education and credentials, although these may also be important.

Certification for professional belonging and a sense of achievement, both intrinsic, were also the most important motivators, reflecting findings from nursing (Piazza et al. 2006). Of the external motivators, only employment expectations received a substantial number of responses. However, interviews suggested employees were also motivated by their employers who supported certification financially and by providing opportunities for participation in meetings and trainings. Motivational factors involving market demand (marketing, client demand, and competitiveness) received fewer responses in either the survey or interviews. By contrast, clients not caring about certification and tree care workers claiming to have enough business without certification were two of the leading reasons (along with the internal barrier of procrastination) for not becoming certified. The lack of demand-driven responses for motivation underscores the need for research that addresses the consumer side of arboriculture and whether increasing customers' knowledge of certification would motivate more tree workers to become certified.

Findings highlight the difference between peer influence and a sense of professional belonging. Compared to professional belonging, peer influence

Figure 5. Summary of responses from the survey reflecting motivations. External motivations are black, internal motivations are dark grey, and Other is light grey.

Figure 6. Summary of responses from the survey reflecting barriers. External barriers are black, internal barriers are dark grey, and Other barriers is depicted as light grey.

was cited infrequently. Professional belonging refers to the sense of connection, acceptance, and fulfillment that individuals experience within their chosen field or industry. It encompasses the feeling of being an integral part of a community of like-minded professionals who share common goals, values, and interests. A sense of identity, satisfaction, and professional fulfillment are key components of professional belonging and may apply to more individuals as a motivator rather than peer influence.

Overall, those who did not pursue certification, or dropped it, tended to be late in their career or perceive it as unnecessary given an adequate customer base. Lack of certification was often entwined with explanations indicating sufficient sales, excessive workloads, and an abundance of experience. Discussions of these three primary deterrents translated into a lack of time to study for and take the exam, as well as pursue continuing education. Some participants acknowledged benefits of certification and, therefore, expressed interest in becoming certified, but they had stalled, in some cases for an entire career. Certification required sacrifice and trade-offs they were unable or unwilling to make. The competing factors of a tree worker's work environment undoubtedly stretches capacities for obtaining and maintaining certification (Bardekjian 2015). We speculate that market demand motivators, ordinances requiring certification to access municipal contracts for example, might drive these participants towards certification, but absent these, they have little incentive.

Recommendations

Assuming certification is appropriate for the individual, we can make some initial recommendations.

Testing Barriers

Given the prevalence of testing and studying cited as barriers, professional associations might continue to evaluate methods to address these barriers, particularly learning disabilities (notably, several testing accommodations for the CA exam are currently available). Removing some testing barriers could address issues related to exam preparation and anxiety. While several online study guides exist, additional interactive study guides such as smart phone applications and videos could help potential exam takers. Online course materials could accommodate non-traditional learners by including short sessions and videos while incorporating a foundation of andragogical learning theory. In addition, a stepped certification process using micro-credentials (e.g., a credential in pruning or installation) might be employed. It is important to note that the certification organizations must comply with third-party auditing requirements which may complicate changes to testing.

Marketing and Economic Incentives

Individuals, companies, and professional organizations could engage the public towards an improved awareness about arboriculture practices. The industry could improve on marketing practices such as displaying the Certified Arborist logo and communicating to clients (and tree workers) the differences between those who have proved knowledge and competency, operate under industry accepted standards and ethics, and receive continuing education, compared with those who do not. If the public erroneously interprets arboriculture as mostly tree removal, because that's what they are often sold and see in "the streets," then it would demand low prices. However, if arborists

would demonstrate arboriculture as a science-based profession and link their practices to safer, healthier, long-lived and more resilient urban forests, then public perception might evolve, resulting in a premium for certified arborists. As the findings demonstrate, some cities are already creating economic incentive for certification by requiring it to bid on municipal contracts. Again, future research with a statistically representative sample could elaborate on these possible trends and identify nuances in demand-driven decisions.

Professionalism

Fostering a professional identity occurs through engagement and social interactions as well as providing guidelines and rules for credentials and standards. Emphasis should be placed on arboriculture as a profession practiced in the public interest and which includes opportunities to progress as an individual (Irland 2007; Hoekstra 2011). Trees produce environmental benefits to society which arborists manipulate through treatments. Arborists must treat trees (and clients) with accountability, safety, and ethics just as architects have a responsibility to design a structure that meets structural standards, cost effectiveness, and welfare practices (see ISA 2024c).

According to the findings, uncertified tree workers have limited interactions with professional organizations or peers. They tend to be isolated in business as well as learning best practices. Professional organizations could promote more peer-to-peer socialization, develop incentives and encouragement to attend meetings, and create other opportunities to foster learning and professional growth. In addition, employers could establish internal mentorship programs that promote certification, continuing education, and participation in professional organizations. Educated, informed, and engaged employees make for stronger businesses and a robust profession.

A Descriptive Matrix

Recommendations could be described using an illustrative matrix (Figure 7). Having no statistical basis, the matrix is a pictorial tool to help visualize the recommendations and we acknowledge it is an oversimplification of the diversity of commercial tree workers. The matrix depicts the strength and occurrence of motivations to be certified increase along the *x*-axis, while the strength and occurrence of barriers increase along the *y*-axis. The arrows describe

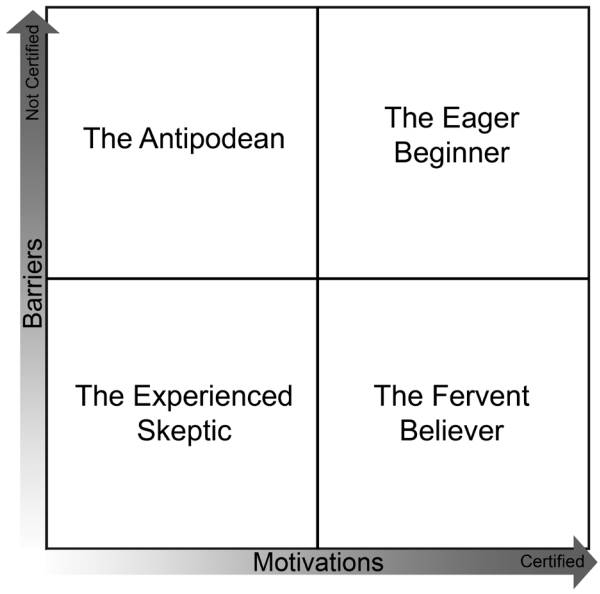

Figure 7. Descriptive matrix of commercial tree care workers for messaging about certification. Note this graphic is for illustrative purposes only and is not based on statistical representation.

motivations and barriers; the quadrants are independent of each other. The matrix broadly classifies commercial tree workers into four groups: (1) The Fervent Believer, (2) The Eager Beginner, (3) The Antipodean, and (4) The Experienced Skeptic. It is important to underscore such descriptions are generalities and reflect an approach commonly used in integrated marketing communication practices (Moriarty 1994).

The Fervent Believer became certified as soon as they were eligible. They have significant years of experience in the industry. They often offer an extensive suite of services beyond tree removal and pruning as their expanded knowledge and skills through continuing education has provided additional capabilities. Additionally, they believe certification adds credibility and validation to their abilities and creates opportunities. They support professional organization and have a sense of professionalism as they attend meetings, volunteer with professional societies and the public, and serve as mentors to The Eager Beginner. The Fervent Believer often attains additional credentials and promotes those to their peers. Barriers are minimal or were overcome to achieve certification.

The Antipodean is in many ways the opposite of The Fervent Believer. The Antipodean has never been

certified and is unlikely to ever become certified. They have significant years of experience in industry and, because of this, they believe continuing education is not necessary or useful. They assert having sufficient business without certification and perceive no client demand for certification. They tend not to see their work as a profession in which to progress, but a job to earn income. They often do not have a suite of services, but focus on removals and major hazard pruning. They are cynical about credentialing systems and do not engage in professional organization activities. They discourage certification to others. There are virtually no motivational factors that would drive The Antipodean towards certification.

The Experienced Skeptic may not be certified or may have dropped certification. They have significant years of experience in industry, and continuing education is not highly valued due to the perception that their experience supplants education. They also claim sufficient business without certification and perceive little client demand for certification. The Experienced Skeptic is cynical about credentialing systems and tends not to be engaged in professional organization activities. Compared to The Antipodean, they are not entirely resistant to certification. They are most strongly motivated by external drivers, particularly an employer or client (e.g., a municipality) requiring certification. Some skeptics may be moved if they think certification contributes credibility. They may also be someone involved in professional activities, such as limited attendance at meetings and webinars or more business focused organizations such as the Tree Care Industry Association (TCIA).

The Eager Beginner is relatively new to the industry and enthusiastic about getting certified as soon as they are eligible. As their moniker implies, they are eager to learn and gain new skills. They may be mentored by The Fervent Believer or desire mentorship. They seek to engage professionally and are open to participating in public events such as Arbor Day. They have a mix of external and internal barriers, including completing the experience period required to apply for the exam, test anxiety, difficulty studying for the exam, limited time and money, procrastination, lack of awareness, and no professional mentor. Importantly, The Eager Beginner could one day become either The Fervent Believer or The Experienced Skeptic.

Study Limitations

In this study we asked participants if marketing or client demand had an impact on the value of certification. To complement these stated opinions, a market analysis would be an important next step to understanding if and how clients actually value certification. Moreover, the online survey was not based on a representative sample of geography or credentialed participants and therefore generalizations to the larger population of commercial tree care workers must be made cautiously. The study population is extremely diverse and can be difficult to reach. In particular, future research would benefit from higher participation of non-certified tree workers as well as international respondents. Reflecting our findings that uncertified workers were rarely engaged in industry-wide endeavors, our survey results were skewed towards the opinions and behaviors of certified arborists who were more likely to participate. As a result, it was necessary to broadly seek out survey participants from several contact lists as well as referral. By contrast, purposive sampling of interview participants resulted in a balanced sample; however, recruiting uncertified participants was exceedingly difficult.

Further, a challenge with qualitative research is that the researchers' biases and interpretations can influence the study because the researchers were active participants in the data collection process. This potential for bias was mitigated by comparing field notes and independently analyzing data. Although the interpretive nature of qualitative research poses challenges in terms of reproducibility, the in-depth and nuanced descriptions contribute to insights that may be difficult to discover in survey research. Second, the small sample size of the qualitative data collected in a specific region limits the generalizability of findings to broader contexts. The findings, however, are crucial in their value for describing a specific context and exploring emergent themes regarding the research questions.

CONCLUSION

The results and the matrix suggest several lessons about promoting certification. An understanding of why individuals pursue opportunities for professional improvement, whether through certification or other means, is important to address the increasing needs for knowledgeable and competent commercial tree care workers to care for an expanding, complex urban

landscape. Despite its many benefits, certification should not be assumed to be relevant or appropriate to all tree care workers. Individuals will decide whether certification meets their needs regardless of industry messaging about the benefits of certification. Messaging should probably not focus on the fervent believer because they are already advocates. It is, however, important to maintain them so they do not risk becoming The Experienced Skeptic. The Antipodean is least likely to be brought to certification, no matter what.

The Experienced Skeptic, while having challenging barriers to overcome, could agree to a push towards certification. The motivator is more than likely to be an externally-driven market demand factor. The Eager Beginner is the most viable goal for certification messaging. They must be reached, and their barriers addressed, before they shift to The Experienced Skeptic. The Eager Beginner sees value in certification and professionalism, and they are connected in some ways to The Fervent Believer. It is important to link the two types of professionals together in mentoring and other interactions. Capitalizing on or promoting internal motivators will ensure acceptance by The Eager Beginner.

LITERATURE CITED

Adams PS, Brauer RL, Karas B, Bresnahan TF, Murphy H. 2004. Professional certification: Its value to SH&E practitioners and the profession. *Professional Safety.* 49(12):26-37. https://www.proquest.com/scholarly-journals/professional-certification/docview/200367633/se-2

Bardekjian AC. 2015. Towards social arboriculture: Arborists' perspectives on urban forest labour in Southern Ontario, Canada. *Urban Forestry & Urban Greening*. 19:255-262. https://doi.org/10.1016/j.ufug.2015.10.014

Bartlett K, Horwitz S, Ipe M, Liu Y. 2005. The perceived influence of industry-sponsored credentials on the recruitment process in the information technology industry: Employer and employee perspectives. *Journal of Career and Technical Education.* 21(2):51-64. https://doi.org/10.21061/jcte.v21i2.661

Byrne M, Valentine W, Carter S. 2004. The value of certification—A research journey. *AORN Journal*. 79(4):825-835. https://doi.org/10.1016/S0001-2092(06)60823-5

Creswell JW. 2013. *Research design: Qualitative, quantitative, and mixed methods approaches*. 4th Ed. London (United Kingdom): SAGE Publications, Inc. 273 p.

Dahle GA, Benjamin A, McGill D. 2020. Assessment of skills needed in entry-level urban foresters in the USA. *Urban Forestry & Urban Greening*. 52:126694. https://doi.org/10.1016/j.ufug.2020.126694

Day S, Ries P, Bassett CG, Wiseman PE, O'Herrin K. 2022. Support for a new credential in urban forestry: Results from a survey of urban forest professionals. *Urban Forestry & Urban Greening*. 73:127588. https://doi.org/10.1016/j.ufug.2022.127588

Doherty K, Ryan HD, Bloniarz D. 2000. Tree warden and utility arborists: A management team working for street trees in Massachusetts. *Journal of Arboriculture*. 26(1):38-47. https://doi.org/10.48044/jauf.2000.005

Eggert GR. 2001. The value of professional certification: Now and in the future. *Information Executive*. 5(10):2-5.

Elmendorf W, Watson T, Lilly S. 2005. Arboriculture and urban forestry education in the United States: Results of an educators survey. *Journal of Arboriculture*. 31(3):138-149. https://doi.org/10.48044/jauf.2005.017

Glaser B, Strauss A. 1999. *Discovery of grounded theory: Strategies for qualitative research*. New York (NY, USA): Routledge. 282 p. https://doi.org/10.4324/9780203793206

Gramling AA, Myers PM. 1997. Practitioners' and users' perceptions of the benefits of certification of internal auditors. *Accounting Horizons*. 11(1):39-53.

Grief C. 2007. The perceived value of BCEN certification. *Journal of Emergency Nursing*. 33(3):214-216. https://doi.org/10.1016/j.jen.2006.12.021

Hoekstra H. 2011. A career roles model of career development. *Journal of Vocational Behavior*. 78(2):159-173. https://doi.org/10.1016/j.jvb.2010.09.016

International Society of Arboriculture (ISA). 2024a. Credentials. Atlanta (GA, USA): ISA. [Accessed 2023 February 23]. https://www.isa-arbor.com/Credentials/Apply-Now/Apply-for-Eligibility

International Society of Arboriculture (ISA). 2024b. Find an Arborist. Atlanta (GA, USA): ISA. [Accessed 2023 September 15]. https://www.treesaregood.org/findanarborist/findanarborist

International Society of Arboriculture (ISA). 2024c. Code of Ethics. Atlanta (GA, USA): ISA. [Accessed 2023 February 23]. https://www.isa-arbor.com/Credentials/ISA-Ethics-and-Integrity/Code-of-Ethics

Irland LC. 2007. *Professional ethics for natural resource managers: A primer*. Forestry and Environmental Studies Publication Series, 7. New Haven (CT, USA): Yale School of Forestry and Environmental Studies. 218 p. https://elischolar.library.yale.edu/fes-pubs/7

Julius A, Kane B, Bulzacchelli MT, Ryan HD III. 2014. Compliance with the ANSI Z133.1–2006 safety standard among arborists in New England. *Journal of Safety Research*. 51:65-72. https://doi.org/10.1016/j.jsr.2014.09.010

Miller RL, Hauer RJ, Werner LP. 2015. *Urban forestry: Planning and managing urban greenspaces*. 3rd Ed. Long Grove (IL, USA): Waveland Press, Inc. 560 p.

Moriarty SE. 1994. PR and IMC: The benefits of integration. *Public Relations Quarterly*. 39(3):38-44. https://www.proquest.com/scholarly-journals/pr-imc-benefits-integration/docview/222405943/se-2

Morse, JM, Barrett M, Mayan M, Olson K, Spiers J. 2002. Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods*. 1(2):1-19. https://doi.org/10.1177/160940690200100202

Patton MQ. 1990. *Qualitative evaluation and research methods*. 2nd Ed. Thousand Oaks (CA, USA): Sage Publications, Inc. 536 p.

Piazza I, Donahue M, Dykes P, Griffin M, Fitzpatrick J. 2006. Difference in perceptions of empowerment among nationally certified and noncertified nurses. *Journal of Nursing Administration*. 36(5):277-283. https://doi.org/10.1097/00005110-200605000-00021

Raising Trees Webinar Series. [date unknown]. Auburn (AL, USA): Auburn University. [Accessed 2023 July 19]. https://secure.touchnet.net/C20021_ustores/web/product_detail.jsp?PRODUCTID=4418

Robinson E, Mee C. 2004. Salary survey. *Nursing*. 34(10):36-39. https://doi.org/10.1097/00152193-200410000-00037

Segalla M, Sauquet A, Turati C. 2001. Symbolic vs. functional recruitment: Cultural influences on employee recruitment policy. *European Management Journal*. 19(1):32-43. https://doi.org/10.1016/S0263-2373(00)00069-4

US Bureau of Labor Statistics (USBLS). 2023. Databases, Tables & Calculators by Subject. Occupational Employment and Wage Statistics (OEWS). Washington (DC, USA): United States Department of Labor, Bureau of Labor Statistics. [Accessed 2023 August 9]. https://www.bls.gov/data

US Census Bureau. 2023 May 18. Large southern cities lead nation in population growth. Washington (DC, USA): US Census Bureau. CB23-79. https://www.census.gov/newsroom/press-releases/2023/subcounty-metro-micro-estimates.html

Vogt J, Hauer RJ, Fischer BC. 2015. The costs of maintaining and not maintaining the urban forest: A review of the urban forestry and arboriculture literature. *Arboriculture & Urban Forestry*. 41(6):293-323. https://doi.org/10.48044/jauf.2015.027

ACKNOWLEDGEMENTS

This study was funded by a grant from the International Society of Arboriculture Southern Chapter. The authors gratefully acknowledge helpful comments by Dr. Paul Ries and others.

Jason S. Gordon (corresponding author)
Warnell School of Forestry and Natural Resources
University of Georgia
180 E. Green St.
Athens, GA, USA
470-252-6874
jason.gordon@uga.edu

Arnold "Beau" Brodbeck
Alabama Cooperative Extension System
Auburn University
Auburn, AL, USA

Conflicts of Interest:
The authors reported no conflicts of interest.

Appendix.

Survey questions with authors' identification of external or internal factors.

What influenced you to become certified? (select all that apply)

Client demand (external; *Client demand*)

Marketing/advertising (external; *Marketing*)

Certification is an extension of my education/knowledge of tree care (internal; *Add to education*)

My colleagues became certified (external; *Peer influence*)

A sense of professional belonging (internal; *Professional belonging*)

Employment expectations (my job required or encouraged me to become certified)(external; *Employment expectations*)

Certification gives me a sense of achievement (internal; *Sense of achievement*)

It provides opportunities to work in specific types of employment and be competitive over other job candidates (external; *Competitiveness/positioning*)

Other (explain) _____

What prevents you from becoming certified? (select all that apply)

I've never heard of arborist certification until now (external; *Unaware*)

I'm doing fine without certification (external; *Enough business*)

My clients don't care about certification (external; *Client demand*)

I have many years of experience, so I don't need the credential (external; *Experience*)

I'm at the end of my career (external; *End of career*)

The exam is too expensive (external; *Exam too expensive*)

Renewal is too expensive (external; *Renewal too expensive*)

I don't want to give ISA any money (external; *ISA money*)

I am not good at taking tests (internal; *Bad at tests*)

I intended to get certified but never got around to taking the exam (internal; *Procrastination*)

Studying for the exam takes too much time (internal; *Lack of time*)

I have taken the exam but haven't passed (internal; *Failed test*)

I don't want to be required to get continuing education credits (internal; *Continuing education required*)

I didn't keep up with continuing education credits (internal; *Didn't maintain continuing education*)

I have a college degree, so I don't need the credential (internal; *College degree*)

Other (explain) _____

Appendix. Continued

If you were once certified, but dropped certification, what influenced you to become certified in the past? (select all that apply)

Client demand (external; *Client demand*)
Marketing/advertising (external; *Marketing*)
Certification is an extension of my education/knowledge of tree care (internal; *Add to education*)
My colleagues became certified (external; *Peer influence*)
A sense of professional belonging (internal; *Professional belonging*)
Employment expectations (my job required or encouraged me to become certified)(external; *Employment expectations*)
Certification gives me a sense of achievement (internal; *Sense of achievement*)
Other (explain) _____

Why did you drop certification? (select all that apply)

Renewal is too expensive (external; *Renewal too expensive*)
I don't want to give ISA any money (external; *ISA money*)
My clients don't care about certification (external; *Client demand*)
I'm doing fine without certification (external; *Enough business*)
I don't want to be required to get continuing education credits (internal; *Continuing education required*)
I didn't keep up with continuing education credits (internal; *Didn't maintain continuing education*)
I have so much experience that I don't need the credential anymore (internal; *Experience*)
I'm at the end of my career (internal; *End of career*)
Other (explain) _____

What influences you to stay certified? (select all that apply)

Client demand (external; *Client demand*)
Marketing/advertising (external; *Marketing*)
Continuing education opportunities (external; *Add to education*)
A sense of professional belonging (internal; *Professional belonging*)
Employment expectations (my job required or encouraged me to become certified)(external; *Employment expectations*)
Certification gives me a sense of achievement (internal; *Sense of achievement*)
Other (explain) _____