Regulation and accreditation of surveying professions - USA and UK - challenges going forward

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Key words: regulation, self-regulation, accreditation, CPD, curricula, education, professional practice

SUMMARY

The surveying profession plays a crucial role in property boundary determination, land development, and infrastructure planning. Surveyors ensure the preservation and protection of land and property rights. This paper explores the educational, experience, and examination requirements for individuals aspiring to become licensed land surveyors. This is done with the aim to compare the current approaches to regulation and accreditation of surveying professions in the US and the UK.

This research is based on a review of legal regulations, guidelines of the professional bodies, and wider literature on professional regulations and accreditations.

The professional licensing, accreditation, and registration processes differ between the UK and the US. Within the US, they vary from state to state. However, they generally include common elements that are essential for ensuring the competence and professionalism of land surveyors.

It is expected that his paper will inform a discussion on the challenges for the land and property surveyors' market to ensure that they effectively support the public.

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1. PURPOSE

Land acquisition and development are some of the most important aspects of the economy. Land surveyors play an important role in ensuring the preservation and protection of land and property rights by providing their services throughout the whole property lifecycle.

Education is important to any professional service as it creates a continuity foundation of knowledge of the subject that is being practiced. The knowledge of land surveying has been around for many centuries and from the technical perspective the only things that have changed are the technological advancements of the tools used to measure and calculate and the legal aspects of how land administration is conducted. Therefore, it is imperative that an individual obtain this minimum knowledge through formal education. However, this is not enough. As noted by Morgan *et al.* (2002), there is a need for quality assurance in educating future surveyors. More recently CLGE/IG-PARLS launched the Code of Professional Qualifications for Property Surveyors (2022), which requires its signatories to ensure that their countries follow the minimum qualifications and prerequisites requirements for education, practices, examination, CPD, ethics and quality control. While this Code and the proposed European Geodetic Surveyors' Act (Krupa *et al.*, 2023), relate to countries in the European Union, such changes have the potential to influence future changes in other countries.

Governments across the world are changing their approaches to protecting the public. Some keep leaning toward market deregulation with the aim of encouraging an individual's right to private entrepreneurship, to reduce market entry and transaction costs. Some others promote more stringent rules aiming to bring more order to the land management system and to increase market efficiency. In light of the ever-changing conditions, environmental, political, and social changes, and technological innovations, there is a risk that current approaches are no longer as efficient as they were in preserving and protecting land and property rights. Additionally, the shortage of professionals in specific roles affects those already in the profession. Hence, the aim of this study is to compare the current approaches to regulation and accreditation of surveying professions in the United States of America (US) and the United Kingdom (UK) to inform a discussion on the challenges for the land and property surveyors' market to ensure that they are able to effectively support the public.

2. METHODOLOGY

This research is based on a literature review including:

- legal requirements pertaining provision of surveying services;

- guidelines, professional standards, and other rules imposed through professional self-regulation; and
- wider professional literature on the experience of professional regulations and accreditations under changing market conditions.

The US and the UK have been selected as these are mature large economies with complex regulatory frameworks, where in absolute terms a large number of surveyors operate across various surveying professions. Moreover, these markets, due to their legal systems, are heavily reliant on trusted professionals in making changes to land use and right transfers.

3. ANALYSIS

In the UK and the US, the professional regulations are complex as they operate on multiple levels. The foundations for professional regulations are set via legal regulatory frameworks in the form of (1) national laws and (2) lower-level regional, state, and country legal regulations. As these only set key rules, surveyors are also subject to professional self-regulation. This may be in the form of (1) a compulsory membership to professional organisations with special national or regional status or (2) voluntary membership to professional organisations. Each of these professional organisations imposes different requirements in terms of minimum educational outcomes, professional skills and behaviours, evidence of practice, and professional training. These organisations also require members to obey their specific ethical rules.

3.1 United States of America

To qualify to become a practicing surveyor in the US, an individual must meet certain requirements which should guarantee a level of surety to protect the public's safety and welfare within their own governing state. The National Council of Examiners for Engineering and Surveying (NCEES) was created from the government-appointed members from each jurisdiction to establish a consortium of model law and rules, which may be adopted by each state to set a standard for regulating the profession within each respective jurisdiction. Additionally, NCEES creates and maintains the national examination for surveying in the form of two examinations: the fundamentals of surveying (FS) and principles and practice of surveying (PS) examinations. Each state can then decide through statutory law, to administer a state-specific examination to test the candidate's local knowledge. The NCEES meets once a year after a zonal meeting to address any issues that certain jurisdictions have experienced within that year. The NCEES represents all fifty states and extra-territorial jurisdictions. With the support of the National Society of Professional Surveyors (NSPS), adopted NCEES model law and rules are encouraged for implementation within each respective jurisdiction.

The varying levels of educational degree programs in the US build the foundation of this system through associate to doctorate degrees. Yet the programs' curricula vary due to regulatory requirements within their respective states. However, there is a core knowledge that is

consistent within land surveying. To ensure this consistency, many regulatory agencies rely on ABET accreditation for these programs.

The NCEES adopted model laws are used as a template for policy making in jurisdictions within the US. The current model law for education in surveying is as follows (NCEES, 2021):

1. Graduating from a surveying program of four years or more accredited by the Engineering Accreditation Commission of ABET (EAC/ABET), the Engineering Technology Accreditation Commission of ABET (ETAC/ABET), the Applied and Natural Science Accreditation Commission of ABET (ANSAC/ABET), or meeting the requirements of the NCEES Surveying Education Standard
2. Graduating from a program related to surveying with a duration of four years or more as approved by the board [of the governing state] and with a specific record of two years of progressive experience in surveying.
3. Graduating from a program of four years or more as approved by the board [of the governing state] and with a specific record of four years of progressive experience in surveying.

Although the regulation of the individual states varies, the NCEES model law sets a precedence for adoption in all states.

3.1.1. Experience Requirements

Just like in education requirements, the experience requirement varies from state to state in the US. Again, the NCEES has adopted a model rule outlining the experience required to become a license surveyor including (NCEES, 2022):

1. Through progressive on surveying projects and must demonstrate an increasing quality and responsibility;
2. Through equivalent work in the armed services;
3. Under the supervision of a licensed professional surveyor

Just to name a few (for a more thorough list, see Model Rule (NCEES, 2022)).

Again, many states have adopted statutory requirements to becoming licensed professional surveyors which vary state by state, e.g. the experience requirements for the State of Texas are such that the experience gained has to be through delegated responsible charge under the supervision of a registered professional surveyor engaged in the practice of surveying as defined in the Texas Occupation Code §1071.254.

3.1.2. Examination Requirements

In most of the states, the US operates a two-step examination process. Many states, upon graduation, require a successful passage of the FS examination which tests the candidate's

knowledge on basic boundary surveying knowledge. After a successful FS examination and gaining and/or documenting required experience, the candidate is required to at least pass the PS in addition to a state (jurisdictional) examination to a pathway to licensure. Both the FS and the PS examinations are assessed through a rigorous quality assurance through NCEES hired outside psychometricians. Additionally, each jurisdiction is represented by members of their respective agency to craft items of general survey questions to confidently test their minimum competency. Since each jurisdiction has respective statutory and case law that governs boundary reconstruction, those states may choose to administer an additional state-specific examination. Across the US, land was dispositioned under various sovereignties. The metes and bounds method of the 13 original colonies in the northeast to the Spanish and Mexican influences in Texas affected the original boundary determination for original land grants much differently than the sectionalized method of original boundary layouts adopted by the US in the Land Act of 1785 that now forms much of the US cadastral system. Certain boundary issues that arose were resolved through case law in each state respectively and independently which may or may not have similar outcomes. Therefore, in an effort to protect the public some states implemented a separate mandatory qualification process of understanding those differences before licensure.

3.1.3. Continuing Education

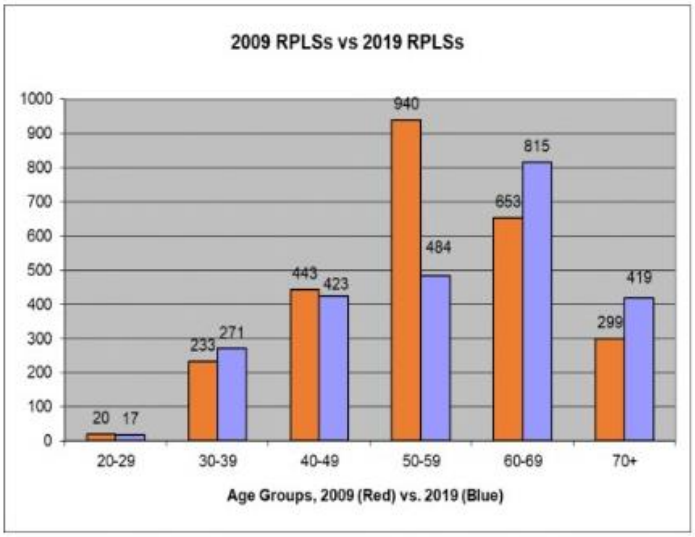
An important requirement to maintaining licensure in the respective US jurisdictions is the continuing education. Continuing education is a function of progressive learning within one's area of practice to ensure the safety of the public's welfare. Many institutions, societies, vendors, etc. offer continuing education in the form of professional development hours, which are required by statutory law within one's jurisdiction, to obtain throughout a defined period. However, a jurisdiction may require a minimal competency requirement to renew licensure under their respective acts.

3.1.4. Challenges and Considerations

As the US moves forward, the recognition of challenges with attrition of the professional surveyors looms in the forefront of the licensure regulations. In 2019, the Texas Board of Professional Surveyors (TBPLS) addressed this issue head-on as the Sunset Commission determined that it would be best regulated under a combined board of both engineers and land surveyors, now known as the Texas Board of Professional Engineers and Land Surveyors (TBPELS), with caveats to reduce the educational requirements from a four-year baccalaureate degree to a two-year associate degree and implementing the NCEES PS examination as a part of the process to becoming a professional surveyor. In 2023, the TBPELS addressed the Sunset Commission's concern to create a state-specific examination to accompany the NCEES PS examination as a pathway to licensure.

The NSPS have submitted several amicus briefs to address concerns about a reduction of regulations in states seeking to either abolish regulation or make it less restrictive to licensure. NSPS's stance has always been to promote professional surveyors while protecting the public. There is an apparent perplexing perception that the surveyor profession is becoming obsolete while the demand for their expertise is increasing. For over ten years, Dr Gary Jeffress, Texas Registered Professional Land Surveyor and former professor in Geographic Information Science at the Texas A&M University – Corpus Christi, has kept the statistics of the ages of the active registered professional land surveyors in the State of Texas. His study has shown an aging profession with fewer younger surveyors entering the industry. Every year up through 2019, he would publish his data in a ten-year graph. This trend in Texas appeared to be comparable to the rest of the US.

Figure 1: US – Texas – Registered Professional Land Surveyors, September 2019



Age Range	10 year difference
20-29	-3
30-39	38
40-49	-20
50-59	-456
60-69	162
70+	120
Total	-154

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	2592	2588	2580	2547	2562	2514	2495	2498	2479	2457	2434	2434
Average	55.42	55.79	55.96	55.97	56.20	56.13	56.21	56.48	56.74	56.93	57.05	57.54
Median	56	56	56	57	57	57	57	58	58	59	59	60
Age 65 and up	519	540	547	546	585	579	612	666	704	734	731	804
% 65+	20.0	20.9	21.2	21.4	22.8	23.0	24.5	26.66	28.40	29.87	30.03	33.03

5 people had birthdates that were unusable in the 2019 dataset

Age Group	2009 Count	2010 Count	2011 Count	2012 Count	2013 Count	2014 Count	2015 Count	2016 Count	2017 Count	2018 Count	2019 Count	2018-2019 Difference
20-29	20	20	24	27	19	25	29	21	18	18	17	-1
30-39	233	248	254	249	264	278	291	298	296	281	271	-10
40-49	443	408	383	380	380	362	363	377	391	407	423	16
50-59	940	919	882	848	803	762	721	652	591	550	484	-66
60-69	653	682	715	752	743	764	767	796	809	816	815	-1
70+	299	303	289	306	305	304	327	335	352	362	419	57
Total	2588	2580	2547	2562	2514	2495	2498	2479	2457	2434	2434	0
Below age 40	*253*	*268*	*278*	*276*	*283*	*303*	*320*	*319*	*314*	*299*	*331*	*32*

2018 Youngest Surveyor: 26 years ***2018Oldest Surveyor: 96 years***

Compiled by Brianne Bernsen, RPLS

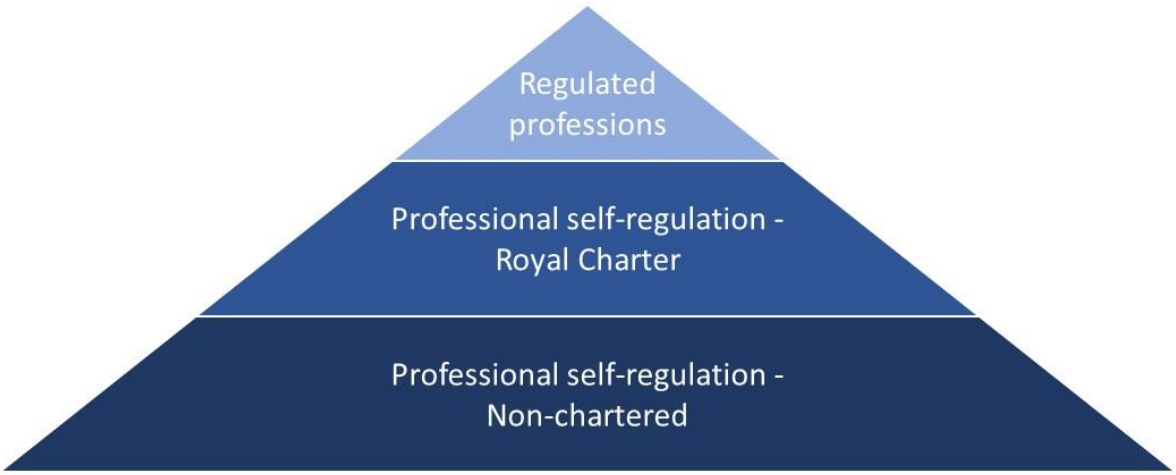
While each jurisdiction addresses the need for more licensees within the industry in their own way, professional societies and academia look for ways to encourage more candidates to pursue this career. In the ever-changing environment of new demands for the expertise of surveying professionals, there is a growing additional need for paraprofessionals to support licensees. Programs such as the Certified Survey Technician (CST) have been created to address these needs through NSPS. That is because of the NSPS' ambition to fill the void and to protect the public by promoting the CST programs, as well as many other programmes supporting the industry.

3.2 United Kingdom

3.2.1 Multi-tier Professional Regulation

In the UK, a 3-tier professional regulation system exists (Figure 2), which includes: (1) professions regulated by law, (2) professional self-regulation on the basis of the Royal Charter, and (3) professional self-regulation outside of the Royal Charter.

Figure 2: UK – 3-tier professional regulation system



Source: Authors' compilation

Regulated Professions

In the UK there are three surveying-related professions: (1) conveyancer, (2) solicitor, and (3) architect. Conveyancers are subject to either Council for Licensed Conveyancers, which remit is to regulate *"specialist conveyancing and probate lawyers that protects consumers and fosters competition and innovation in the provision of legal services"* (CLC, 2023). They do so by regulated membership via the designation of a Licensed Conveyancer. For Scotland, the same is done for Conveyancing Practitioners via The Law Society of Scotland (LawScot, 2023).

Similarly, solicitors are subject to compulsory membership in the relevant law society (Gov, 2023). For Scotland and Northern Ireland, it is the direct membership to the society. However, in England, the Law Society has passed regulations to the Solicitors Regulation Authority. Lastly, all practicing Architects must be registered via the Architects Registration Board, which as a statutory body ensures that *"only those who are suitably competent are allowed to practise as architects"* (ARB, 2023).

Professional Self-Regulation - Royal Charter

In the UK, most organisations associating professionals acting in the public interest since 13th century may be granted the Royal Charter. The Royal Charter is granted by the Sovereign on the advice of the Privy Council (Part of the UK Government). Overall the purpose of the Royal Charter is *to "create public or private corporations and to define their privileges"* (Privy Council, no date). Royal Charters are reserved for bodies *"that work in the public interest and which can demonstrate pre-eminence, stability and permanence in their particular field"* (Privy Council, no date). By now, there are over 1,000 chartered bodies. Of these, about a dozen are relevant for broadly understood land management (Table 1), with the Royal Institution of Chartered Surveyors (RICS) being the key one. RICS' remit is "*to effect positive change in the built and natural environments"* and to *"promote and enforce the highest professional standards in the development and management of land, real estate, construction and infrastructure"* (RICS, no date, a).

Table 1: UK - Selected Professional Chartered Organisation

Selected Professional Chartered Organisation	Acronym
Chartered Association of Building Engineers	CABE
Chartered Institute of Arbitrators	CIArb
Chartered Institute of Architectural Technologists	CIAT
Chartered Institute of Building	CIOB
Chartered Institute of Housing	CIH
Chartered Institution of Building Services Engineers	CIBSE
Chartered Institution of Civil Engineering Surveyors	CICES
Chartered Institution of Highways and Transportation	CIHT
Institution of Royal Engineers	InstRE
Institution of Structural Engineers	IStructE
Landscape Institute	LI
Royal Institute of British Architects	RIBA
Royal Institution of Chartered Surveyors	RICS
Royal Town Planning Institute	RTPI

Source: Privy Council (no date)

Professional Self-Regulation – Non-Chartered

In the UK there are several professional organisations that are not subject to the Royal Charter but act in the interest either of their members or in the wider public interest. Their remits vary and so do membership requirements. These include UK-based organisations such as the International Association of Hydrogeologists (IAH) or Royal Society of Ulster Architects (RSUA) as well as UK chapters of international organisations such as the Urban Land Institute (ULI) or International Facility Management Association (IFMA) to name a few.

3.2.2 Background on RICS

Established in 1868, RICS originates from the Surveyors Club established in 1792 (Lemen, 2022). Since then, the membership has been based on qualifications and or experience with an examined entry to the organisation (Thompson, 1968). RICS is one of the oldest professional organisations subject to the Royal Charter granted in 1881. That means that any changes to the RICS constitution require a two-step process:

1. Approval by the majority of members at the General Meeting; and
2. Ratification by the Privy Council.

This mechanism effectively establishes a self-regulation mechanism under the principles of proportionality, accountability, consistency, transparency, and targeting as set by the UK Cabinet Office (Better Regulation Task Force, 2003). As this results in RICS being internally regulated through By-Laws (setting general principles and procedures), Regulations (operation as a regulatory body), and Standing Orders (RICS Governance Procedures and Processes), the self-regulation mechanism removes the need for the UK Government to maintain appropriate legislation. These ensure that the RICS members conduct themselves in an appropriate manner by acting ethically, responsibly, and professionally.

RICS, unlike many other professional organisations, is globally recognised and opens doors for professionals to operate internationally and improves their mobility. Thus, its reach and influence on the surveying profession is well beyond the UK market only.

3.2.3 Pathways to Membership

As listed in Table 2, RICS through 21 pathways covers a wider range of (1) Land, (2) Property, and (3) Construction & Infrastructure surveying professions (RICS, 2018). While the RICS membership is not compulsory in the way it is for regulated professions, the RICS' reputation and key role in shaping the industry has effectively led to businesses and the public relying on RICS members as those who can protect their interest in land and property-related matters. Noteworthy is that the popularity and public expectation of professional RICS membership vary across surveying professions. Some surveyors, especially operating in businesses where the

property is not the core business or in interdisciplinary fields, may be more closely aligned to other professional organisations operating covering property-related professions such as the Chartered Institute of Building or Royal Town Planning Institute or to other organisations associating professionals dealing with different types of businesses, e.g. accountants with the Association of Chartered Certified Accountants or The Chartered Institute of Taxation, to name a few. Given the growing relevance of the property sector and issues arising from sutainability and climate change challenges as well as the importance of property as an asset class, there is growing interest in RICS membership among those practicing in these fields and seeking recognition beyond the non-chartered professional self-regulation or to boost their reputation when working with other chartered surveying professionals. They typically choose the traditionally less popular pathways such as Corporate Real Estate or Property Finance & Investment to name a few.

Table 2: RICS pathways

Subject area	**Pathway**
Land	Environmental surveying Geomatics Land and resources Minerals & waste management Planning & development Rural
Property	Personal property / arts and antiques Commercial property practice Corporate real estate Facilities management Management consultancy Property finance & investment Residential Taxation allowances Valuation Valuation of businesses and intangible assets
Construction and infrastructure	Building control Building surveying Infrastructure Quantity surveying & construction Project management

Source: RICS (2018)

3.2.4 Professional Registrations

On top of the membership regulations, for some types of activities, RICS created special schemes to ensure additional monitoring of their members. These include Firm Registration,

Valuer Registration, the Designated Professional Body Scheme, and the Client Money Protection Scheme (RICS, no date, b). For these RICS performs regular review and practice support visits to ensure their compliance and risk awareness (RICS, no date, b). E.g. for Valuer Registration, it means auditing valuation services for compliance with professional standards and following best practice guidelines. Given the international recognition of RICS qualifications, both the standard compliance and the additional compliance based on schemes help ensure global consistency of surveying services.

3.2.5 Routes to Membership

RICS offers Associate (AssocRICS) and Chartered (MRICS and FRICS) membership (RICS, no date, c). MRICS is available via six routes: (1) APC structured training, (2) Senior Professional; (3) Specialist, (4) Academic, (5) Direct entry for members of specified other professional bodies and (6) AssocRICS progression. For MRICS, in the UK the APC structured training route is by far the most popular, whereas internationally, especially in countries with no accredited degrees, the Senior Professional route is much more popular.

AssocRICS is available on completion of the associate qualification via the assessment of professional competence (APC), subject to one of the following pre-requisites:

a. 1 year of relevant experience and a relevant bachelor's degree;
b. 2 years of relevant experience and a relevant higher/advanced/foundation qualification; or
c. years of relevant experience (no qualifications required).

MRICS prior to the APC, must meet on of the following pre-requisites:

a. relevant experience and an RICS-accredited degree;
b. 5 years of relevant experience and any bachelor's degree; or
c. 10 years of relevant experience operating at an advanced level by seniority, specialisation, or in academia.

3.2.6 Educational Requirements - Accredited Programmes

Globally RICS offers about 1,200 accredited undergraduate and postgraduate level degrees, of which most are at UK universities. For Land pathways, most of the programmes are accredited for the Planning & development pathway, followed by Geomatics and Environmental Surveying, whereas programmes relating to Land and Resources or Minerals & waste management pathways are rarely accredited (Table 3).

Table 3: Land pathways – accredited courses

Pathway	Number of accredited courses	
	UK	**Non-UK**
Environmental surveying	29	12
Geomatics	31	19
Land and resources	1	2
Minerals & waste management	0	0
Planning & development	107	37
Rural	16	2

Source: RICS (2023)

While in the UK, completion of accredited programmes is seen as a basic requirement for entry to surveying professions, outside of the UK, it is more a stamp of quality beyond what would normally be required in other countries. It is the RICS strategy to ensure educational consistency and maintain, monitor, and support these programmes to maximise opportunities for graduates in the competitive surveyors' job market.

3.2.7 Educational Requirements - Apprenticeship Scheme

Noteworthy is that the UK Government facing a major shortage of professionals and growing costs of education (especially further education) is promoting the Apprenticeship Scheme which combines learning and working by passing the education costs to employers. With RICS, these are available through educational institutions starting from A-level (qualification leading to further studies) and only for selected professions (Table 4). Several UK universities either have already enriched their bachelor’s and master’s offer or are currently developing Apprenticeship Scheme compliant programmes equivalent to what they already offer for both full-time and part-time students. However, the challenge is the requirement of the Apprenticeship Scheme for close tri-party collaboration between the learner, the academic institution providing education, and the employer. With the recent major issues around the supply of qualified construction workers and other professionals to support new developments, striking a balance between these three parties may be problematic and it seems that this will significantly affect the universities delivering apprenticeship programmes.

Table 4: Surveying apprenticeships in England

Profession	Level	Equivalent
Surveying technician	3 (advanced)	A level
Chartered surveyor	6 (degree)	Bachelor hons degree
Geospatial survey technician	3 (advanced)	A level
Geospatial mapping and sciences	6 (degree)	Bachelor hons degree
Construction Quantity Surveying Technician	4 (higher)	Certificate of higher education (CertHE) Higher national certificate
Land Referencer	4 (higher)	Certificate of higher education (CertHE) Higher national certificate

Source: RICS (no date, d)

3.2.8 Continuous Practice Development

Assuming an RICS member adheres to RICS rules and regulations and pays their annual fees, their membership is for life. To ensure the members are up to date with the latest regulations and current issues, each member is required to 20 hours of Continuous Practice Development (CPD) per annum. These must include a minimum of 10 hours of formal training (e.g. professional course, structured online training, technical authorship, learning that includes an assessment measure) and may also include informal learning such (e.g., private study, on-the-job training, attendance at informal seminars or events where the focus is on knowledge sharing) (RICS, no date, e). On top of this, every 3 years members must complete the ethics training and pass the ethics test.

3.2.9 Challenges and Considerations

In 2019 RICS faced a scandal following a BDO report that raised concerns about treasury management controls. As it affected trust in the organisation RICS commissioned an independent review (Levitt, 2021), which recommended major improvements to corporate governance, legal advice, and whistleblowing with the expectation that these would prevent such situations and improve RICS's reputation. Following on that a review of RICS' purpose, governance, and strategy was commissioned (Bichard, 2022). This report was based on feedback from members, employees, non-executives, and stakeholders from the UK and internationally. Among others, it recommended a *"renewed and increased focus on the public interest"*, *"maintaining self-regulation"* and *"showing greater leadership on the issues that matter most to society, such as sustainability and climate change"* (Bichard, 2022), thus suggesting strengthening the role of RICS in shaping the future of the built environment. Since then, RICS launched numerous actions and has reinforced some procedures and regulations and more is now under consideration by the members, e.g. regulation of valuers and valuation firms (RICS, no date, f). To respond to changing environments RICS needs to keep reviewing their

remit. One of the major tasks is now the refresh of the pathway requirements with an emphasis on both mandatory (including Sustainability, Data Management, and social competencies around diversity and inclusion) and technical competencies to promote interdisciplinarity of surveying professions (RICS, 2023b). It is expected that these changes will improve links to other sectors including information technology, and environmental science, and improve RICS membership in disciplines such as Minerals and Waste Management, Environmental Surveying, and Infrastructure, to name a few.

On top of this, RICS aims to address wider societal challenges related to diversity. While in the UK female participation in accredited programmes seems to be reasonably healthy, female attrition in the profession and the subsequent membership need more work to ensure gender diversity in the industry. Another issue is still low participation of generally underrepresented ethnic minorities and LGBT+ professionals for which RICS advocates through insights reporting and role models but there is a long journey to catch up in these areas (RICS, no date, g).

4. CONCLUSIONS

Surveying professions in both the US and the UK are subject to complex regulations. In the US, the state varying rules, while helping adherence to local regulations, limit surveyors' mobility. On the other hand, the UK's voluntary membership does not guarantee public protection when surveying services are provided by non-chartered specialists. With the changing nature of demands for surveyors, it is pivotal that:

- The licencing systems ensure a stable inflow of those interested in these careers;
- The surveyors are appropriately trained for life so that in the long run their professional performance is consistent and so that they are prepared to innovate and adjust to new conditions; and
- At all times the surveyors adhere to appropriate professional and wider regulations and behave ethically in the public interest.

Hence, it is absolutely critical that those willing to join the profession are nurtured so that they stay in the profession while supporting those appropriately trained to continue their practice. It follows that the relevant regulators and professional bodies should work together with the education sector and employers to ensure the sector attracts and keeps in the profession those who can best serve society.

This paper only looked at two countries. Professional regulations vary from country to country. In some, stringent professional regulations are seen as a major market entry barrier for professionals. In others, they are the safeguards of the legal system. Thus, further research is required to understand the challenges resulting from under- and over-regulation of surveying professions.

Nevertheless, it is expected that his paper will inform a discussion on the challenges for the land and property surveyors' market to ensure that they are able to effectively support the public.

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BIOGRAPHICAL NOTES

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Davey Edwards is a professional land surveyor in Texas and Oklahoma, a Texas licensed state land surveyor, and a US Bureau of Land Management Federal land surveyor. He is currently the survey director of Baseline|DCCM and an adjunct professor in the Geographic Information Science undergraduate and Geospatial Systems Engineering graduate programs at Texas A&M University - Corpus Christi. He is the former director of the Texas Spatial Reference Center and the State of Texas Geodetic Coordinator for the US National Geodetic Survey.

Davey has his BS degree in Biomedical Science from Texas A&M University in College Station, MS degree in Geospatial Surveying Engineering from Texas A&M University in Corpus Christi, and Doctorate degree in Geosciences from the University of Texas in Dallas. His studies concentrated on land administration systems and riparian boundary morphology.

Davey is the current president-elect of the National Society of Professional Surveyors and a past president of the Texas Society of Professional Surveyors. He is the 2006 recipient of the TSPS Young Surveyor of the Year award and the 2007 recipient of the TSPS Chapter President of the Year award. He is currently serving as a survey emeritus member of the Texas Board of Professional Engineers and Land Surveyors and a member of the TBPELS licensed state land surveyor committee. He is an active member of the National Council of Examiners for Engineers and Surveyors (NCEES) and is currently on the item writing committee. He is a past member of the TBPELS survey advisory committee. He has served as public member of the Texas Board of Architectural Examiners and as the licensed state land surveyor member of the Texas Board of Professional Land Surveyors. He is a former chair of the City of Decatur's planning and zoning commission.

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