Conventional wisdom in many American families holds that a college degree is a prerequisite for a successful career. Most high school guidance offices now stress the importance of higher education as an essential stop on the path to upward social mobility, even if high schools differ substantially in the types of colleges that they funnel their students toward (Schneider and Stevenson 2000). The expansion of higher education in late 20th and early 21st century America is creating a “credential society” in and of itself (Collins 1979), yet another source of credentials has been growing in higher education’s shadows. Occupational associations are offering their own certification programs in a vast system of credentialing that now certify millions of Americans, despite no legal requirement that individuals earn these certificates to practice their desired occupations or, in many cases, even a clear understanding on the part of employers and members of the public of what skills these certifications are intended to verify.

The sheer number of certification programs and the variation in what they claim to require of individuals seeking certification is striking. The universe of voluntary certification programs that the American worker can choose from is clearly quite expansive: from becoming a “greenbelt” in “Six Sigma” quality assurance processes to becoming certified in the handling of sensitive security information by the American Board for Certification in Homeland Security, a seemingly endless array of certification choices await the American worker. Some certifications, such as the National Association of Realtors’ “Realtor” designation for real estate agents, have been around several decades; however, certifications are quite new to a large spectrum of other occupations, ranging from college residence hall directors to personal fitness trainers. Indeed, the certification boom has led to the creation of a new organization, the Institute for Credentialing Excellence, to accredit the universe of voluntary certification programs based in the United States. Despite this attempt to bring order to the universe of certifications, relatively few certifications have earned accreditation, and certification programs are all over the board with respect to what they demand out of their applicants, ranging from rigorous closed-book examinations coupled with years of required work experience in some technical fields to the Board Certified Fraud Examiners’ “Money-Back Pass Guarantee.” This paper attempts to make sense of the phenomenon of voluntary certification by focusing on a few key empirical questions. How many certification programs exist in the United States, and how fast is the universe of programs growing? What types of occupations are seeing the greatest density of certification programs, and why? I conclude by addressing the theoretical issues of why so many certification programs compete to credential the same workers and whether the boom in certification programs is challenging the theories of professionalization advanced by earlier professions scholars who maintained that occupations increase their standing by aligning themselves with higher education.
How many certificates? How many certificate programs?

Though there is no national survey data on the prevalence of certifications issued by occupational and industry organizations, data are available on the prevalence of certification’s sister concept, licensing. The Gallup Organization conducted a survey on Americans’ lifelong learning habits that included a question on licenses, indicating that about 29% of the adult workforce is employed in licensed occupations (Kleiner and Krueger 2010) - though we can’t generalize from this survey to the phenomenon of voluntary certification. Gallup is not alone in its interest in estimating the prevalence of credentials earned outside the formal education system; the Census Bureau is in the process of developing a supplement to the Survey of Income and Program Participation that will potentially enable an occupation-by-occupation breakdown of rates at which workers earn certificates, though results will not be available until December 2013.¹ The US Department of Education is also interested in measuring the prevalence of certificates in the general population and the demographic characteristics of individuals who attain them; they are in the process of pilot-testing a new data collection effort, the Adult Education and Training Study, though it is unclear when this study will be formally launched (Bolvin 2012).

Surveying the universe of certification programs is entirely another matter. A certification program could exist in isolation without any recognition outside of its practitioners; should such a program be treated as part of the universe of certificate programs? The US Department of Labor (DOL) Employment and Training Administration’s Career OneStop program has decided that a program must have two basic pieces of formal infrastructure to be included in its database, namely a publically accessible website and evidence of some sort of standing steering committee or formal governance structure. Unfortunately, perhaps the most convincing indicator of a program’s level of institutionalization - recognition by employers and/or consumers of services - is difficult to gauge without extensive program-by-program survey research.² Thus, one must decide at some point that an occupational certification meets some standard of non-triviality, and this process is likely to involve some level of subjectivity. A certification program hawked on a late-night infomercial as a way to make easy money through self-employment in home energy auditing or freelance travel writing may be issued by an organization with limited expertise in either the subject matter being certified or the design of credentialing programs – and such an organization may have ample incentive to make certification as easy as possible if selling a credential is a source of profit.

Certificates offered by an educational institution without direct ties to industry may be quite rigorous.

¹ For further details, see the SIPP anticipated data release schedule: http://www.census.gov/sipp/DEWS/2008Schedule.pdf.
² The Career OneStop program is making some effort to measure employer recognition of certifications through a “Credentials Forum” on its website, where it directly asks employers for their opinions on various well-known credentials. This effort has yielded mixed results to date.
indeed, the majority of certificates offered by major research universities are probably of quite decent quality. However, a certification program not offered by an occupational or industry organization falls outside the scope of this study, as such programs would probably fall by definition within the formal postsecondary education system. (A few occupational certificates, such as the CELTA certificate for ESL instructors designed by, endorsed by, and bearing the seal of a Cambridge University institute but delivered at a network of private language schools around the world, are the result of a partnership between a higher education institutions and occupational entities.) Most certification programs offered by occupational and industry organizations can be completed through self-study, though some may prescribe some sort of formal training before allowing individuals to sit for an exam. And, some may require individuals to jump through other hurdles before awarding the certificate, such as the Green Building Certification Institute’s requirement that individuals complete some sort of hands-on green building project before being allowed to take the LEED certification exams.

A few sources of information exist on the universe of occupational certification programs, each with their own pros and cons. Three published data sources stand out as the most comprehensive attempts at cataloging the universe of certification programs, each targeted toward a very different audience. Consequently, they each have distinct pros and cons for use in academic research:

The Career OneStop Certifications Finder, maintained by the State of Minnesota under contract with the US Department of Labor’s Employment and Training Administration. This database’s unit of analysis is the certification program, rather than the certifying authority. Certification programs are categorized into occupations according to the O*Net occupational coding system. Certifications are placed in as many O*Net occupations as the Career OneStop staff deems appropriate. The Certifications Finder has the distinct advantage of being linked into the O*Net coding scheme, enabling a systematic analysis of which occupations are at the forefront of the certification phenomenon. Being designed for use by job seekers and “workforce professionals,” however, it lacks some information that might be useful for individuals studying the certification phenomenon, such as data on the number of individuals holding a given credential. It does include information on fees and some basic information on how rigorous the process of attaining and maintain a certificate is, such as whether work experience is required to sit for a certification exam and whether continuing education courses are required to maintain a certificate. As noted above, the Career OneStop staff enforce various criteria for inclusion in the database, emphasizing signs that a credential is well developed and recognized by external actors.

The National Trade and Professional Associations of the United States directory, published by Columbia Books. This reference volume is a survey of occupational and industry organizations, not certification programs – but it includes data on certifications offered by each organization, alongside data on their other activities (e.g., annual meetings, publications). Though there is no guarantee that the directory’s data are comprehensive, it is one of the more impressive attempts to catalog occupational credentials, and the preeminence given to
credentials in the directory gives some indication of just how important of a function credentialing has become for many organizations. Some data from the printed directory are also available for download – at a hefty charge – from a premium subscription website, AssociationExecs.com. It is presumed that all organizations surveyed for inclusion in the directory are asked about their credentialing programs, though interpretation of any data from this source should be prefaced with the observation that cataloging credentialing opportunities is not a primary goal of the directory and information about certification programs is largely based on self-reported data.

The *Guide to National Professional Certification Programs*, published by the Human Resources Development Press. This is a printed volume that catalogs a large proportion of the certification programs in existence as of its most recent publication date (2001), but does not make any claim to comprehensiveness. Unfortunately, this volume does not appear to be updated on a regular basis. However, it goes beyond raw data with short written summaries of most certification programs it lists; its summaries may be of some use for individuals seeking a qualitative view of the landscape of certification programs in a given industry.

An overall increase in the number of certification programs offered is difficult to chart owing to the lack of a systematic data source that tracks founding dates (and programs that may now be defunct), but several factors offer at least anecdotal evidence that the phenomenon is growing. One is the establishment of organizations that “credential the credentials,” namely, the Institute for Credentialing Excellence and the American National Standards Institute. The addition of data on certification programs to the *National Trade and Professional Associations of the United States* directory is another sign of growth in the certification field, as is recent interest in adding questions about certification attainment to federal social research programs (see below). The only attempt by a sociologist to survey the entire landscape of certification programs to date, relying on a census of occupational associations identified through organizational directories, found 1,908 certificate programs in existence as of 1999 (Weeden 2002). Contrasting this figure with the approximately 3,071 certification programs listed in the 2012 *National Trade and Professional Associations of the United States* directory and the 5,028 certifications in the Career OneStop database as of January 2013 (see Table 1) suggests robust growth in certification programs in the first decade of the 21st century, though it does not help us chart the (presumed) growth in the proportion of the population earning certifications. Furthermore, substantial differences in various authors’ definition of what constitutes a certificate (e.g., whether IT vendor certificates are counted) must be kept in mind in any comparison across data sources.

**Which occupations have the most certification programs? Why?**

Occupations vary greatly in their defined scope. Nearly all occupations have specializations and/or var-
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iations in the types of tasks performed across industries. The experience of being a primary care nurse working in a college health center may, for example, be very different from the experience of a nurse working with patients recovering from surgery in a major hospital. Other occupations may be better defined across employment settings. The fundamentals of being a barista may be the same regardless of whether one is working in a boutique coffeehouse or an airport coffee cart. Thus, we may expect heterogeneity in the breadth of tasks – and thus variance in the opportunities for specialization – across occupations. Some occupations will tend to have more certification programs simply because there are more opportunities for specialization. Furthermore, certifications differ in the scope of their subject matter. Some seek to certify overall competence in the core tasks of an occupation, whereas others seek to certify individuals in some specialized set of tasks within a given occupation’s task jurisdiction, or in a set of tasks or knowledge that cuts across occupations. And, furthermore, some may certify individuals as holding a particular ideology or worldview in addition to specific applied knowledge, as may be the case with some certification programs in the “green” sector; a Green Advantage certified construction worker may not just be knowledgeable about green construction materials, but, if the rhetoric of the credential is to be taken at face value, also shares a vision “that buildings throughout the world are constructed in an environmentally sensitive manner that supports social and economic sustainability” (Green Advantage “Vision, Mission, and Deliverables”).

The Career OneStop Certifications Finder attempts to deal with the problem of variance in the scope of certification programs by categorizing programs into either “core” or “specialty” depending on a subjective judgment of the extent of an occupation’s “core knowledge” that is tested through a certification program. They also have a special category, “advanced,” assigned to certifications that require at least an associate’s degree, more than two years of work experience, or prior completion of a “core” certificate within the occupation. Though it is difficult for the Career OneStop staff to make a judgment as to whether a credential is core or specialized solely on the basis of what a certifying organization chooses to reveal about its certification in public or in response to an analyst’s query, it is a starting point for differentiating between those certifications that may be in competition with each other to credential workers on the core knowledge of an occupation versus those that may be so specialized that they are not in competition with each other.

What characterizes high certification fields? And low certification fields?

Several occupational characteristics, as measured by O*Net occupational characteristic scores, are strongly and significantly correlated with having a large number of certification programs at the occupational level. O*Net scores for skill requirements in systems evaluation and systems analysis are highly correlated with

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3 Information in this paragraph is derived from a DoL Career OneStop internal memo obtained through an email request by the author.
having a large number of certification programs active in an occupation, as are operations analysis, judgment, and social perceptiveness. In other words, occupations requiring analytical skills tend to see a large number of certification programs. On the other end of the spectrum, occupations requiring high levels of skill in repairing, equipment maintenance, and operations control – all characteristics of typical “blue collar” jobs heavy in manual labor – tend to have fewer organizations actively issuing certifications. Also notable is a strong correlation (r=.398) between the service orientation demanded of individuals in an occupation and the number of organizations offering certification programs, suggesting that certification could be a valuable signal for individuals who might be in positions characterized by high visibility to those outside the organization.

<<Table 2 about here>>

We can look at the correlates of the number of “core” certificates (as defined in the Career OneStop certifications database) as possible predictors of whether an occupation will be characterized by competition between credentialing organizations. Skill requirements in systems design and systems analysis are also the two greatest predictors of having a large number of “core” certification programs, suggesting that occupations requiring these skills tend to be characterized by some competition between organizations claiming to offer comparable certificates. Intriguingly, there are no significant predictors of having fewer core certification programs. This may mean that “core” certification tends to correlate with skill in general, rather than specific types of skill. However, a closer look at a variable representative of an occupation’s technical orientation selected for illustration below – the extent to which it requires “the use of scientific rules and methods to solve problems” (O*Net “Skills Search”) – shows a curvilinear relationship in which the number of core certifications in occupations characterized by high scientific skill requirements tends to be lower than in occupations characterized by more average technical requirements. This can be contrasted directly to a more linear relationship between scores for an occupation’s service orientation and its number of core certifications, validating the hypothesis that certifications are more plentiful – and less representative of the model of ideal-type professionalization – in occupations characterized by high levels of exposure to customers or clients.
Strikingly, we see very similar patterns when the effect of the same occupational skill level variables is considered on the number of advanced certifications in a given occupation.

Reproducing these analyses once more considering the number of certifying organizations, rather than the number of core or advanced certificates offered to members of a given occupation, shows slightly different relationships. The relationship between scientific skill requirements and the number of organizations does not taper off substantially at the high end of the skill scale, suggesting that although the total number of different certifications available to individuals in high science skill occupations may be lower than for occupations requiring more average levels of scientific skill, this may simply reflect fewer certificates being offered by each certifying organization. However, the relationship between occupational service orientation and the number of certifying organizations is even steeper, suggesting that occupations that involve high levels of interaction with the public and clients are likely to be characterized by greater competition between certification programs, or at least more options for practitioners seeking certification.

What can we infer from the preliminary analyses above? The consistent, positive relationship between the number of certifications – core and advanced – and certifying organizations and occupational service orientation suggests that certification is particularly prevalent in settings where individual workers may be judged on their credentials before the consumers of their products – either as solo practitioners or as part of an organization’s overall claim to competence. Consumers may not be able to choose a particular software program on
the basis of how well-certified the developers of the program are, but they may hire a web design firm in part on the basis of its employees’ credentials. On the other hand, certification may not be as important for individuals working in fields characterized by high levels of technical skill – fields that typically consist of individuals who are well credentialed by the formal education system. Of course, this analysis is far from complete and will surely change as further data are added on the characteristics of occupations, including the prevalence of educational credentials within occupations and the absolute size of each occupational field. Until then, O*Net occupational skill data should be interpreted primarily as a tool for deriving hypotheses to be tested through both qualitative analysis of occupational cases and quantitative analysis of the ecology of certifications and certifying organizations.

Why are certification programs growing rapidly in some sectors and not others? Why do we see intra-occupational competition between certification programs in some fields?

Basic certification programs are becoming cheaper for professional associations to set up over time. Organizations can partner with national testing center networks (e.g., Pearson Professional Centers and the Educational Testing Service/Prometric) to deliver exams cheaply, and testing fees can generate revenue that flows back into the organization. This advantage may be particularly salient in fast-emerging occupations – fields where, even if there was support for building up a system of higher education credentials, occupational elites may not want to wait for the years that it may take to lobby colleges and universities to modify their course offerings. Similarly, some fields may prefer the relatively low (compared to higher education) barrier to entry posed by a certification program of a typical level of rigor. Thus, certification programs seem to be a particularly valuable option for fields seeking professionalization while undergoing a rapid rate of change.

However, certification is also creeping into occupational fields not characterized by higher-than-average levels of technological change. White-collar, administrative occupations – such as human resource management, project management, and public relations – have witnessed the emergence and growth of vibrant programs of voluntary certification in recent years. I notice that white-collar fields tend to share one striking common characteristic: most tend to require that entrants hold a bachelor-level college degree, but are characterized by an above-average level of heterogeneity in college majors: in other words, entry is traditionally restricted more by the level of one’s credentials than their content. Thus, we can hypothesize that certification may be sought as an additional marker of distinction above and beyond the bachelor’s degree for individuals in highly competitive labor markets, particularly when individuals in a field seem to be defined by a white-collar habitus. This could be exacerbated by a common assumption among many stratum of American society that credentials are generally beneficial, an assumption that has probably increased over time in the middle and upper classes that normally aspire to white-collar, administrative occupations (Schneider and Stevensen 2000).
Though a systematic analysis cutting across occupations will have to be a future step in this dissertation project, I can begin to address the empirical puzzle of intra-occupational competition in certification offerings by looking at a few occupations in isolation. Looking at different cases allows us to consider a variety of theoretical reasons as to why we see intra-occupational competition between certifications.

**Information Technology**

Information technology, broadly defined, is a field with a dizzying array of certifications, most of which know no national boundaries and are often coupled with particular vendors (Adelman 2000). A thriving culture of “vendor certification” emerged as the manufacturers of software and hardware products took charge of training and certifying individuals in the use of their products, ensuring that organizations would be able to find the expertise necessary to operate the latest and greatest products (and, incidentally, tying the career trajectories of many IT professionals to particular technologies and corporations). Specialties that cut across vendors seem to have been developed later, but are actively creating niches within the larger occupations of “programmer” or “analyst.” Information security, geographic information systems, technical support, network administration, software programming, and web design all have certification programs independent of any particular software vendor, suggesting that IT may be professionalizing (or building a system of professions) over time as individuals’ careers are tied less and less to specific firms. Fragmentation of the occupational landscape in IT may be related to the status of IT in higher education - it remains a field that can be accessed through many different educational pathways, including computer science degrees, IT specializations in business schools, associate’s degrees in various programming specialties, and self-study. Therefore, certification serves an important function insofar as it unifies individuals of disparate backgrounds.

Is certification a means through which IT is splintering as an occupation? The expansion of cross-cutting specializations may actually represent the maturing of the occupation more than splintering, as people start to identify with specializations across vendor lines. Yet, it may result in individuals seeking occupational community with fellow specialists, and the weakening of any unified voice that the IT occupation currently enjoys. A potential effect of this is diminished political power for IT vis-à-vis other occupational fields, which may work to IT’s disadvantage when it comes time to push for or against proposed legislation related to such topics as online privacy or international labor mobility.

**Project Management**

Project management, similarly, may be using voluntary certification as a mechanism to upgrade its sta-
tus among other white-collar administrative occupations. The field of project management is characterized by a single dominant occupational association (the Project Management Institute) with a well institutionalized set of certifications, though some offshoot certification programs exist. For example, the American Academy of Project Management offers certification programs that seem similar to PMI’s offerings, though perhaps emphasizing risk management to a slightly higher degree. And, specialist project management programs abound. For example, a new organization, “GPM Global,” is offering a certificate in green project management in accordance with its goal of “evolving the discipline of project management” (“GPM Global”).

The discipline of project management is rooted in several intellectual fields, though engineering and business administration have probably had the greatest influence on what project management is today; thus, individuals enter project management from a diverse array of backgrounds and approaches to solving problems. Despite the best efforts of the Project Management Institute to build a discipline of project management, it remains a field that is somewhat nebulous, thus, as hypothesized by Osagie (1996), certification programs may function to establish an intellectual coherence to the field. By requiring (or, at least, enticing) entrants to the project management field to complete a common set of curricular requirements, certifying organizations build a common set of experiences that can contribute to the emergence of an occupational community. And, project management’s power vis-à-vis other managerial specialties depends heavily upon its perception as a coherent, scientifically-grounded intellectual discipline (Hodgson 2002).

**Green Building**

The green construction/building field crosses many occupations, and it seems that nearly as many certification programs are available to individuals who which to be credentialed as green workers. Workers in just one emerging occupation in the green building field, energy auditing, can choose among at least four certification schemes (LEED, Green Advantage, BPI, and AEE). What distinguishes these certification programs?

One of the most striking differences between certification programs in the green building sector is the extent to which they represent the model of professional self-regulation. Though some programs, notably the LEED and Association of Energy Engineers certifications, seem to be designed primarily by practitioners, the Building Performance Institute and Green Advantage certificates are influenced by contractors. Additionally, the various options reflect disciplinary divides in the green building sphere. Notably, the green design field seems to be characterized by a stronger level of coherence than the green engineering field; several different voluntary certification options exist under the umbrella of LEED in architecture, whereas green engineering credentials may be earned from a broad range of specialty organizations. The fragmented nature of engineering itself must be considered; whereas architecture in the United States is governed by a set of national bodies with clearly differentiated roles (led by the American Institute of Architects), engineering lacks a unified voice, and
many of its specialties overlap (Beder 1998, Blau 1987). Few degrees are awarded in an applied specialty like “energy engineering” - rather, they tend to be in such generalist fields as chemical engineering or mechanical engineering. Thus, credentialing and education outside the formal education system may be quite helpful to the boosters of the “energy engineering” field, who need a common set of knowledge and experience to build identification with their specialization – identification that may be all the more salient if it can be linked to the green movement.

The LEED scheme is also notable because it seems that it is a mechanism through which occupational elites are entrenching themselves. Note the elaborate ladders within LEED, not so much in the others. LEED is unique among credentialing systems in that the same organization (the US Green Building Council) awards credentials to both products and the individuals who make the products: one needs LEED-certified architects in order to build a LEED-certified building. However, merely hiring LEED architects does not in and of itself make a building LEED certified - the work of the LEED-certified builders must be reviewed by a panel of other LEED-certified professionals to ensure that the facility is up to the LEED standard. Thus, the LEED certification program may reinforce architecture and design’s occupational logics, as well as constituting a set of rituals that express shared meaning in the occupation (Trice 1993). Much like an employee assistance program administrator with a background in administering 12-step programs would have a different perspective on the role of an employer in helping individuals recover from alcoholism relative to a fresh college graduate in human resources, someone entering the energy auditing field from a home construction background may have a different perspective from someone entering from a design background or an engineering background. And, these value conflicts may be quite sharp when it comes to one’s relation to the “green” movement.

*Could the expansion of certification be a sign that occupations are no longer following the model of professionalization through pursuit of occupational licensing legislation and training in the formal higher education system suggested in many of the canonical works on professions?*

Certification certainly sidesteps the sacrifice of control that is entailed by both occupational licensing and the incorporation of occupational credentialing into the formal system of higher education. Thus, a growth in occupational certification is consistent with the predictions of Tolbert (1996) that occupations would come to play a more central role in shaping individuals’ career paths and the overall structure of labor markets with time as internal labor markets break down. Though occupational licensing legislation often conforms quite closely to occupations’ stated interests to the extent that it often attracts little opposition (or even input) from other parties (Freidson 2001), it nonetheless robs occupations of some of the autonomy that organizations implementing voluntary certification enjoy. And, the state’s (and public’s) interests can result in licensure requirements that may not conform to the occupation’s self-interests, particularly if the occupation is not well
organized for political action or overlaps with the task domain of other powerful occupations, as is the case in the sphere of health policy. Voluntary certification in nursing specialties, for example, cannot be subjected to the demands of state medical boards. Similar forces may lead occupations to skirt the influence of higher education, though the decision to forego the prestige and authority that higher education credentials convey is a notable one that challenges the argument advanced by Freidson (1984) that occupations marshal the cultural resources provided by higher education to enhance their standing. Certification by occupational bodies, however, ensures a certain level of standardization and, consequently, portability, which higher education provides cannot offer. Evaluating educational credentials earned across national boundaries remains a challenge, one that is less of an issue for members of the global “IT guild” due to the prevalence of internationally recognized certifications (Adelman 2000).

Thus, certification may represent a sort of middle ground or “sweet spot” between sacrificing control to the state through licensure and sacrificing control to higher education through encouraging the creation of degree programs that neatly coincides with the trend of individuals taking charge of their personal career training and credentialing. Though no conference paper would be complete without acknowledging that this is a theoretical framework that requires far more empirical testing, it is a starting point for understanding an emerging labor market phenomenon that has thus far been largely neglected by sociologists.
References


### Table 1: Comparison of Certification Program Directories

<table>
<thead>
<tr>
<th></th>
<th>Career OneStop/ US Department of Labor</th>
<th>Columbia Books</th>
<th>Human Resources Development Press</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Certifications Listed</strong></td>
<td>5,028,* with 944 certifying organizations</td>
<td>3,071**</td>
<td>979*</td>
</tr>
<tr>
<td><strong>Intended Audience</strong></td>
<td>Career counselors, especially those working in Workforce Investment Act-funded “OneStop” centers. Also freely accessible to job seekers online.</td>
<td>Individuals working in the nonprofit and legislative advocacy sectors. Directory is marketed to nonprofits to help them connect with each other, and to vendors that serve nonprofits (e.g., conference centers). Books available in larger public libraries, but prohibitively expensive for most individuals.</td>
<td>HR managers and others who read and review resumes. Also available to job seekers through some public libraries, but publisher seems to sell mostly to corporate HR departments.</td>
</tr>
<tr>
<td><strong>Update Frequency</strong></td>
<td>New certifications are added as they come to the attention of DoL researchers</td>
<td>New volume published annually</td>
<td>Last edition printed in 2001</td>
</tr>
<tr>
<td><strong>Information on Certifying Organizations</strong></td>
<td>Website, phone/address, brief text description if supplied by organization.</td>
<td>Data on key contacts, meetings, publications; estimated membership, staff, revenue figures for some organizations.</td>
<td>Basic contact information. More information usually supplied in written summaries of certification programs (often 2-3 paragraph narrative)</td>
</tr>
<tr>
<td><strong>Geographic Focus</strong></td>
<td>US, but aims to include foreign organizations known to US employers</td>
<td>Organizations with a physical presence in the US</td>
<td>Unclear</td>
</tr>
<tr>
<td><strong>Survey Methodology</strong></td>
<td>Multi-method, including web searching, consulting with employers and DoL researchers with occupation-specific knowledge</td>
<td>Attempt to survey all trade and professional associations; sampling frame unclear (tax filings?)</td>
<td>Unclear, though they seem to have interviewed some representatives of occupational organizations</td>
</tr>
<tr>
<td><strong>Database Organized By</strong></td>
<td>Certification</td>
<td>Organization</td>
<td>Certification</td>
</tr>
<tr>
<td><strong>Occupations Defined By</strong></td>
<td>SOC codes; database also searchable by lay titles</td>
<td>Not sorted by occupation. Index lists organizations by industry; methodology for assigning organizations to industries unclear</td>
<td>Lay titles/authors' common sense</td>
</tr>
</tbody>
</table>

* includes IT vendor certifications  
** rough estimate calculated by multiplying average number of certifications/page by number of pages
Table 2: Draft correlation table with relationships between number of certification programs/certifying organizations and O*Net occupational skill levels. Relationships significant at p > .01 flagged in red.