

# Postsecondary certificates and faculty composition

## Introduction and motivation

Over the past twenty years, the number of sub-associate certificates granted by public postsecondary institutions has more than doubled. Currently, U.S. postsecondary education institutions distribute about one million certificates annually, or about one out of every four postsecondary credentials awarded.<sup>1</sup> Shorter-term certificates—those with programs of less than a year—have experienced particularly rapid growth, with many of these credentials focused on helping students acquire workforce-relevant, discrete skills. Yet, research evidence on non-degree credentials is relatively limited, although there is notable policy push to increase the number of students pursuing non-degree, short-term, and vocational certificates in many states and nationally.<sup>2</sup>

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<sup>1</sup> See Digest of Education Statistics, Table 318.40. Includes bachelor and associate degrees, and certificates below the associate degree level, but not graduate degrees.

<sup>2</sup> Throughout the report, we use the terms “short-term credentials,” “short-term certificates,” and non-degree credentials to describe programs that lead to an award, but do not independently lead to an associate or bachelor’s degree. In our context, this terminology includes postsecondary “diplomas,” which are certificates offered by technical schools in some states. Certificates can require as much as four years of study, and can be granted at the sub-associate’s, sub-bachelor’s, or post-bachelor’s levels. The definition of “short-term” is not consistent in the literature or policy debates, with some considering a credential to be short-term if they are expected to take less time than an associate degree, whereas others define short-term as less than one year or based on credits (such as less than 15 credits). The focus in this research project will be on certificates below the associate level, though there are an increasing number of professional and graduate certificates granted in many contexts that will be the focus of future inquiry.

Our primary goal in this study is to better understand how the higher education workforce responds to changing educational offerings, in this case how the number and nature of faculty relate to the expansion in certificate awards. As certificate programs become an increasingly prominent part of the higher education landscape, it is important to evaluate how this trend can affect the higher education workforce. As more students seek out certificates, and especially shorter-term certificates, this has the potential to affect teaching needs, especially at community and technical colleges where many of these programs have proliferated. Short-term certificates are commonly vocationally oriented, which has the potential to boost demand for faculty who can bring professional experiences and practical knowledge into the classroom, as opposed to more traditional research-heavy academic backgrounds. As a result, increased demand for certificates may lead to a higher proportion of faculty who do not have advanced degrees, such as a master's degree or PhD. As well, by employing professionals who work outside of academia in their respective fields and cannot make a full-time commitment to teach, colleges might be able to bring their expertise into classrooms through part-time positions.

## Context and data

### Context

Though a policy focus on short-term certificates is increasingly common in many states and nationally, we use Kentucky as a focal context given its attention in policy debates and the rate of short-term credential seeking in the state. Kentucky has historically had the highest rate in the country of certificates awarded per capita (nearly twice the national average), public sector certificates awarded per capita (almost three times the national average), and less than one-year certificates awarded per capita. There have been recent high-profile examples of important policymaking in Kentucky that likely affected the supply of and demand for short-term credentials, including incentives in the state's performance-based funding system and state-funded scholarships. Efforts such as these have prompted questions among policymakers about the consequences of short-term certificate program expansions; this proposed project will provide important information that can be used to better understand the costs and benefits of these, and future, policy efforts and investments.

### Data

To address our research question, we integrated three datasets. The first set of data comes from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) which we used to examine trends in tenure- and non-tenure-track faculty composition and degree completion for state public two-year and four-year institutions. The data contain information on total degree completions and employment status and rank for full-time instructional faculty.

The second set of data comes from administrative postsecondary system records from the state of Kentucky that include information about credentials granted and the students who pursue them (both full-time and part-time) at one of 16 community colleges with more than 70 locations across the state. Specifically, we are able to measure completion or pursuit of certificates and associate degrees, as well as courses taken on the pathway toward these credentials, and demographic and background information for students who enrolled in the public community college system.

The final set of data contains public information about faculty in the community college system in Kentucky. We constructed a faculty dataset by scraping available information on faculty published in college catalogs. The catalogs include a yearly roster of each faculty member at each college, including their title (e.g., instructor, lecturer, assistant professor, professor). Importantly, these data also contain information on the educational background of each faculty member included in the catalog.

Our primary analysis period in this study is the 2013-14 academic year through the 2019-20 academic year (note that in the graphs and text, we denote the year by the beginning year, e.g., we denote the 2013-14 academic year as 2013 and the 2019-20 academic year as 2019).<sup>3</sup> The 2013-14 academic year is when data in IPEDS and in the state administrative data tend to be consistent, and provides a starting point after the Great Recession. Our current study ends in the 2019-20 academic year because of delays in receiving recent data from the state and standard delays in the release of national

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<sup>3</sup> Analyses using public community catalogs start in the 2015-16 academic year because of availability.

IPEDS data; however, we plan to update the analysis to include the most recent two years as those data become available. We will also be receiving more detailed information on faculty in Kentucky for the most recent two years that we will incorporate into future analysis.

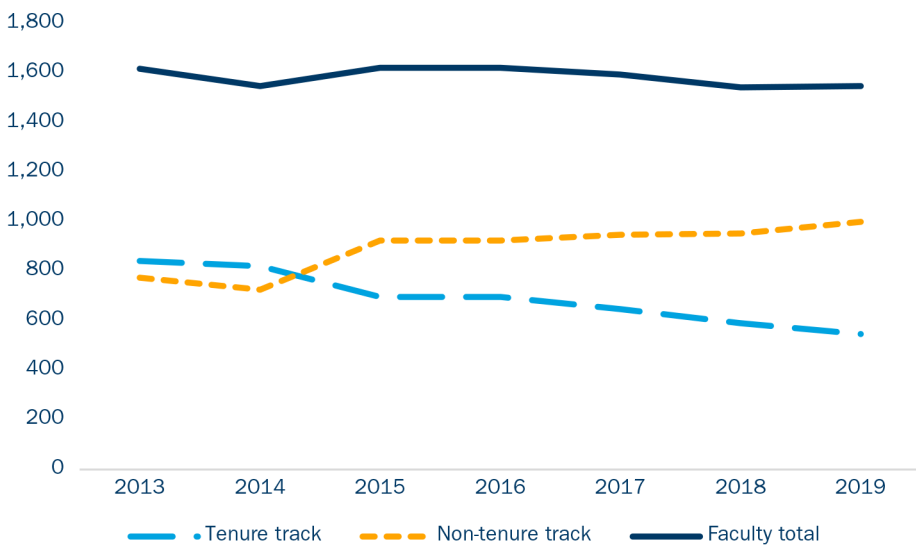
### Key findings

**1. The share of faculty on the tenure track, with a professorial title, has declined over time in Kentucky.**

Between 2013 and 2019 (i.e., academic years 2013-14 through 2019-2020), the number of total faculty members in the Kentucky public community college system decreased from 1,617 to 1,547, which appears to be largely driven by a decline in faculty members who are on the tenure track (See Figure 1). In 2013, a little more than half (52%) of faculty members at the public community college system had tenure-track

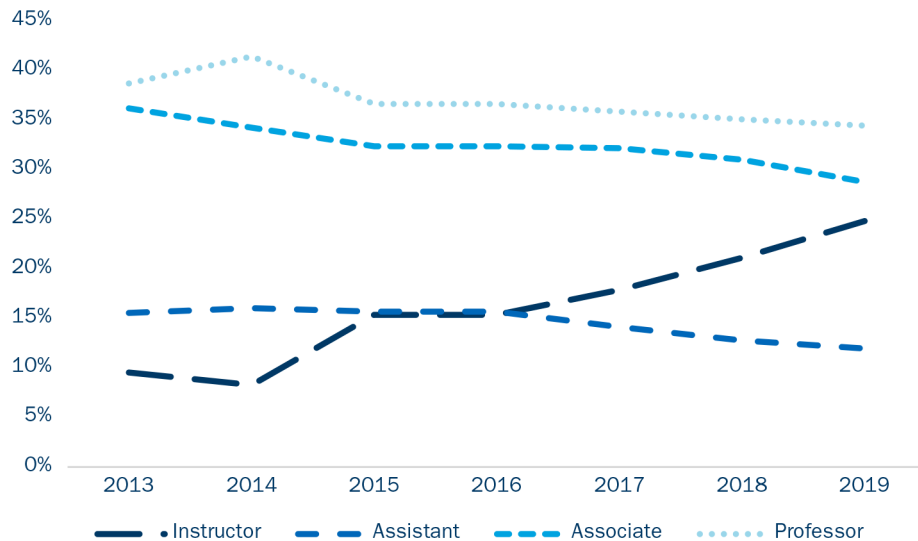
appointments. By 2019, however, the proportion of faculty members who were tenured or working on the tenure track declined approximately 35%, such that about a third of faculty were tenure track. In comparison, the number of non-tenure-track faculty members saw a gradual increase during this period, growing nearly 30%, and comprised about two-thirds of faculty. Correspondingly, much of the growth in non-tenure track faculty appears to be from faculty with a rank of instructor (see Figure 2). The number of instructors increased roughly 150% from 2013 to 2019, such that they grew their share of all faculty from 10% to 25%. At the same time, the number of assistant professors (-26%), associate professors (-24%), and professors (-15%) all declined during the same period.

**Figure 1. Number of faculty in the Kentucky public community college system by appointment type**



Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) from 2013 to 2019.  
 Note: The figure presents trends in the number of faculty members by employment status in the Kentucky public community college system.

**Figure 2. Share of faculty in the Kentucky public community college system by rank**



Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) from 2013 to 2019.  
 Note: The figure presents trends in the number of faculty members by rank in the Kentucky public community college system.

Faculty with a master’s degree makes up the largest proportion of faculty in the Kentucky public community college system, comprising about 60% of all faculty, though their share declined slightly over our analysis period. The proportion of faculty members with doctoral degrees and bachelor’s degrees held relatively steady over our analysis period. Though they make up the smallest number of faculty, the proportion of faculty with a certificate (from 1% to 3%) or associate degree (from 8% to 11%) as their highest level of education increased. In sum, the share of faculty with an advanced degree declined about 5%, whereas the share of faculty with a bachelor’s degree or lower increased about 18%.

**2. The number of certificates conferred by the public community college system substantially increased whereas the number of associate degrees remained relatively flat.**

In Figure 3, we show trends in the number of certificates and associate degrees granted in the two-year system in Kentucky. We display the number of certificates conferred between 2013 and 2019 with red vertical bars. We observe that the number of credentials awarded grew by almost a third, whereas the number of associate degrees awarded remained relatively flat. As a result of this growth in certificates, in the most recent two

years, about 75% of credentials conferred by community colleges were certificates in 2019. In contrast to Kentucky, about 55%-60% of sub-baccalaureate credentials awarded nationally in recent years were associate degrees.<sup>4</sup> And, while the number of certificates awarded nationally also grew over this time period, and at a greater rate than the growth in national associate degrees, the national growth was at a slower rate than Kentucky.

Despite the growth of both associate degrees and certificates in Kentucky, we also observe a substantial decrease in enrollment observed during this period. Community colleges in Kentucky experienced a steady decrease in fall enrollment during this period: the number of students enrolled in the public community college system dropped by about 15% from 2013 to 2019. This corresponds to a national decline of about 18% over

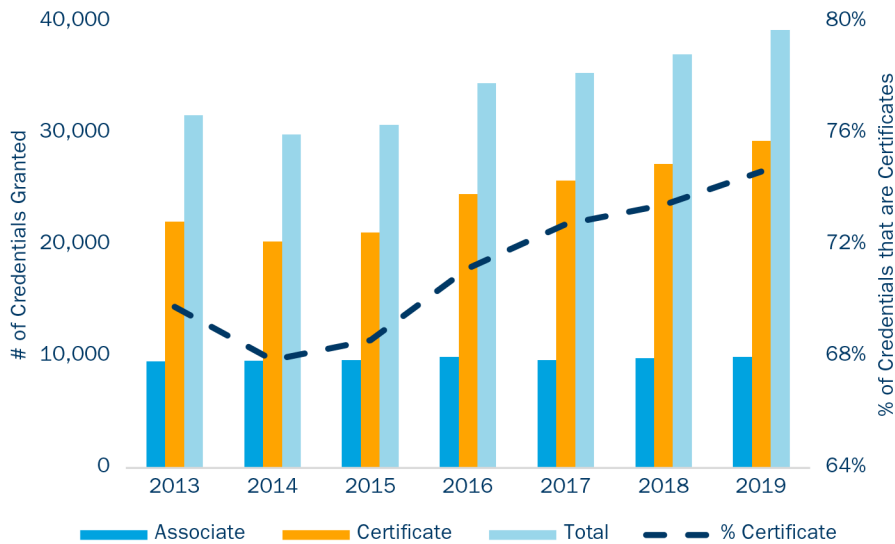
<sup>4</sup> The source data for this statement came from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) from 2013 to 2019.

this same period.<sup>5</sup> Therefore, even as the number of credentials granted increased, enrollment did not follow suit, and actually followed an opposite trend.

Overall, our analysis of trends in enrollment and credentials granted at the public community college system indicates that there has been a shift in the academic credential pursuit of many community college students. The number of certificates conferred by the public community college system substantially increased whereas the number of associate degrees remained

relatively flat. These changes were likely driven by the community colleges in Kentucky increasingly playing a larger role providing shorter, more discrete vocational education and job training programs. At the same time, however, enrollment in community colleges declined. As a result of these trends, the average number of credits completed per credential also declined. As such, even in the face of a growing number of certificates granted, the instructional burden on faculty may not have increased to the same degree.

**Figure 3. Credentials granted by the Kentucky public community college system**



Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) from 2013 to 2019. Note: The figure presents trends in the number certificates and associate degrees and the percentage of certificates conferred by two-year public institutions. Calculations are based on the numbers of certificates in proportion to the total number of credentials by year.

5 The source data for this statement came from U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) from 2013 to 2019.

**3. In institutions with more prominent certificate granting, faculty is less likely to be tenure track, have an advanced degree, or have a professorial title.**

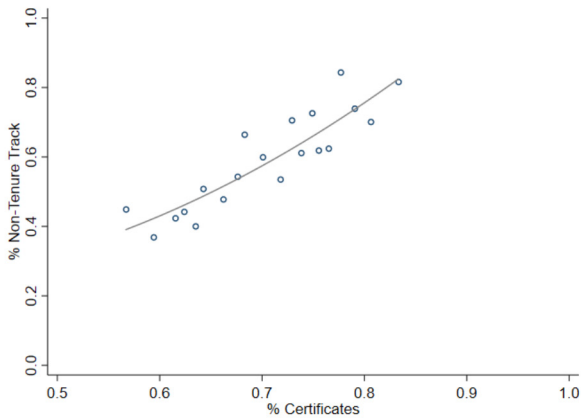
We construct bin scatter plots displayed in Figure 4. We group the share of credentials awarded that are certificates into 20 equally sized intervals, with each marker representing the average share of certificates and average y-variable (number of faculty, % non-tenure track, % instructors, or % without an advanced degree) within each bin. We also fit a quadratic line through the markers. In each of these cases, we note positive relationships: in places where there is a relatively high proportion of certificates granted, there are also a greater proportion of tenure track professors, instructors, and faculty without an advanced degree.

We further estimate how faculty composition—specifically the percentage of non-tenure track faculty members,

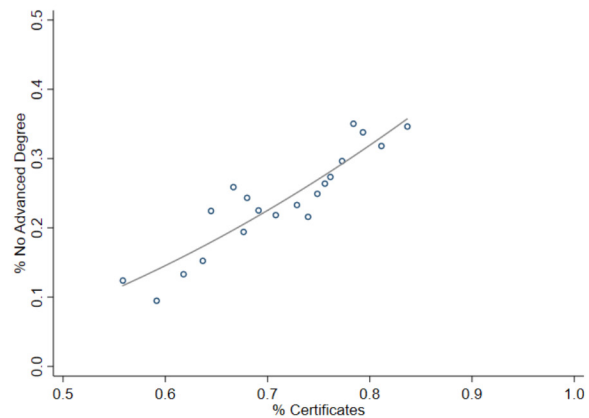
the percentage of instructors, and the percentage of faculty members with a degree at bachelor’s level or lower—vary as certificates awards grow in institutions, while controlling for enrollment, other types of credential awards, and institution characteristics. We find suggestive evidence that in places with more prominent certificate granting, faculty is less likely to be tenure track, have an advanced degree or have a professorial title. In Kentucky, a one percentage point change in the share of certificates conferred is associated with a 1.54, 0.53, and 0.62 percentage point change in the share of non-tenure track faculty members, the share of faculty without a professorial title, and the share of faculty members without an advanced degree, respectively. For all of these outcomes, these point estimates correspond to about three percent of the sample average.

**Figure 4. Bin scatter plots – Kentucky**

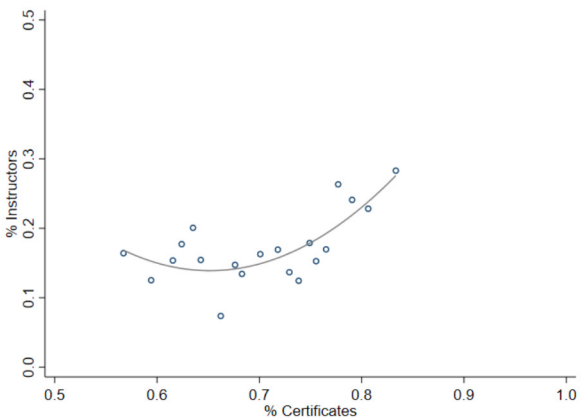
(A) % Non-Tenure Track



(C) % No Advanced Degree



(B) % Instructors



Source: U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System (IPEDS) from 2012 to 2019. Notes: Line is a quadratic fit of 20 equally sized bins of the x-axis variable.

## Implications

This study contributes to the field by deepening our understanding of factors and conditions that shape the higher education workforce. Previous research has provided some theory and evidence as to how faculty composition changes as characteristics and goals of higher education institutions shift (e.g., Kezar & Gerkhe, 2016). In our context, we consider the drastic growth in certificate programs to be an external pressure that has the potential to affect faculty compositions, especially at community colleges that grant the majority of certificates.

The growth in certificates can be linked to several drivers. There has been a growing emphasis nationally and within states to align higher education more directly to employment and to focus on paths that do not necessarily lead to two-year or four-year degrees. Many states have dedicated substantial financial support to promoting workforce-driven educational programs, especially for sub-baccalaureate degrees and certificates, such as the Workforce Development Scholarship Program in Minnesota, the Skilled Workforce Student Grant Program in North Carolina, the West Virginia Invests Grant Program, the Work Ready Kentucky Scholarship, and the “Get There Faster” initiatives in Florida (Rogers, 2021; SREB, 2019). At times, these efforts also correspond to statewide initiatives that promote post-secondary education credentialing among its population—such as Tennessee’s Drive to 55, Texas’ and Kentucky’s 60X30 goals, Wisconsin’s 60 Forward plan, or Hawaii’s 55 by 25—with many of these initiatives counting postsecondary attainment as credentials of any type, not just degrees.

A growing emphasis on postsecondary credentialing and alignment between higher education and employment in state and federal level policies looks to have increased certificate granting, which may lead institutions to increase their hiring of faculty with applied non-research heavy backgrounds and a greater reliance on contingent faculty to minimize costs and maximize hiring flexibility.

Shifts in a faculty workforce have important implications for students’ learning. There is clear evidence that faculty matter for numerous instructional and research reasons, and their effects may be even greater for marginalized student subgroups (e.g., Cole, 2007; Hurtado et al., 2011; Kezar & Maxey, 2014; Umbach & Wawrzynski, 2005; Umbach, 2006). However, the research literature is mixed on whether faculty role or title affects students’

educational outcomes, though identifying conclusively causal effects of faculty is challenging because of the non-random sorting of students and faculty to courses, fields, and institutions. Some researchers presented evidence suggesting that non-tenure track faculty might negatively affect students’ academic outcomes, such as graduation, transfer from two-year to four-year colleges, retention, and success in future courses (Carrell & West, 2010; Eagan & Jaeger, 2009; Ehrenberg & Zhang, 2005; Harrington & Schibik, 2004; Jacoby, 2006; Jaeger & Eagan, 2011; Ran & Xu, 2019; Umbach, 2007). However, findings of other studies indicate a potentially positive effect of non-tenure track faculty on student learning (Bettinger & Long, 2010; Figlio, Schapiro, & Soter, 2015). One reason for this benefit is that many contingent faculty’s primary responsibility is teaching, so they can devote themselves to their teaching craft without pressure to publish or seek grants. Also, part-time faculty who concurrently work outside academia, or who have had substantial related work experience, can bring knowledge that they built through professional experiences into the classroom (Leslie & Gappa, 1995).

Moreover, these trends might give rise to contingent faculty. Enrollments in short-term certificate programs are at risk for fluctuating in response to economic and labor market conditions, since student demand is harder to forecast and because student interests are likely to follow changing employment opportunities and in-demand field dynamics. Therefore, postsecondary institutions may try to preserve their ability to more quickly expand or contract its faculty as enrollment fluctuates. Having a greater number of contingent faculty may bring greater flexibility because institutions often hire these faculty without long-term commitments (Brewster, 2000; Cohen & Braver, 2008; Christensen, 2008; Levin, Kater, & Wagoner, 2006). However, the shift to an increasing number of contingent faculty, which corresponds to other trends such as the erosion of tenure, has implications for faculty themselves as well as for the broader academy and scientific enterprise. Tenure can help protect academic freedom, free inquiry, and open discussion, enabling scientific pursuits and instructional models that may be less subject to pressures that can be imposed by political whims and power structures. Contingent, adjunct, and part-time faculty also often face numerous challenges, including relatively low pay, limited access to benefits, and little job security.



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While the popularity of certificates appears to be linked to faculty composition changes, it did not correspond to growth in the total number of faculty. This may be because though certificate awards grew, enrollment and credits completed per credential contemporaneously declined. In such ways, it is possible that teaching demands—at least as measured by total number of

students taught—did not change in our setting as credential offerings transformed. This does not mean, however, that instructional burdens declined, and it likely increased obligations for academic support staff (including advisors, financial aid professionals, and student affairs officers), many of whom were already stretched thin.



## About the authors

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