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Lindsay Daugherty  
Charles A. Goldman  
Lindsay Butterfield  
Trey Miller

Prepared for  
the Texas  
Higher Education  
Coordinating Board



# Assessing the Potential to Expand **Community College Baccalaureate Programs** in Texas



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Programs** in Texas

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# Preface

States are increasingly exploring a greater role for community colleges in baccalaureate-level education. As of 2014, 17 states including Texas allow at least some community colleges to offer bachelor's degrees. Texas currently limits this authority to three community colleges.

On May 22, 2013, the Texas Legislature approved Senate Bill 414 mandating a study to consider further expanding community college baccalaureate degrees in Texas. The College for All Texans Foundation, which works to further the objectives of the Texas Higher Education Coordinating Board (THECB), asked RAND Education, a unit of the RAND Corporation, to partner with the Texas Higher Education Policy Initiative (HEPI) to conduct the study.

This study assesses unmet workforce-development needs, particularly those necessitating baccalaureate degrees, in nursing and four applied science occupations: computer and information technology, management of fire sciences, management of production/operations technicians, and health information technology. The report provides evidence to support the THECB and legislators in making policy decisions about whether to expand community college baccalaureate programs in these and other areas. The study also recommends activities and processes that can support the policy that is adopted.

This report was released in draft form for public comment and was revised to respond to the 22 public comments received, as well as two peer technical reviews.







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# Assessing the Potential to Expand Community College Baccalaureate Programs in Texas

Lindsay Daugherty  
Charles A. Goldman  
Lindsay Butterfield  
Trey Miller

Prepared for the  
Texas Higher Education  
Coordinating Board

## Summary

Like much of the United States, Texas has seen significant expansion in higher education in recent years. Yet many workforce-development needs, particularly those requiring additional baccalaureate degrees, remain unmet in some areas of the state. Employers and students are calling for additional programs to develop workplace skills and to provide opportunities for career advancement. Increasing levels of education also would benefit individuals and society. Baccalaureate-level needs have been served primarily by universities, sometimes in partnership with community colleges, where a large percentage of students complete the first portion of a degree program. Community colleges are particularly important for first-generation college students from low-income families and for older students, many of whom work while enrolled in classes.

In an effort to make higher education more effective in meeting workforce needs, states are exploring whether community colleges might play a greater role in baccalaureate-level education. Supporters argue that community college expansion is necessary to meet local workforce needs and support a robust economy. They also contend that authorizing community colleges to offer baccalaureate programs will expand students' opportunities to improve their knowledge, skills, and abilities, and to attain credentials for career advancement. Yet there is considerable

debate over the efficacy of community college baccalaureate expansion. Opponents express doubt that expanded community colleges will continue to fulfill their critical missions of workforce preparation and open enrollment. They also fear that expansion may lead community colleges and universities to compete with each other for students, state funding, and other limited resources.

**Should community colleges provide baccalaureate degrees?**

On May 22, 2013, the Texas Legislature approved a bill mandating a study on whether community college baccalaureate degree programs should be expanded in Texas. The Texas Higher Education Coordinating Board (THECB)

asked the RAND Corporation to partner with the Texas Higher Education Policy Initiative (HEPI) to conduct the study. The study has several objectives, which we list along with the corresponding research questions, in Table S.1.

**Table S.1.** *Study Objectives and Research Questions*

Study Objective	Research Question
Assess unmet workforce-development needs in nursing and the applied sciences	Are there unmet workforce-development needs for baccalaureate degrees in nursing and four applied science occupational groups in Texas?
Assess the arguments for and against baccalaureate expansion and other information (e.g., costs) to support THECB and legislative policymaking related to community college baccalaureate expansion	Do community colleges provide an appropriate way of meeting unmet workforce-development needs, particularly those requiring greater baccalaureate production in nursing or the applied sciences?
Recommend potential activities to support implementation of any new policies undertaken to expand the community college baccalaureate	If the state determines community college baccalaureate expansion is an appropriate means to meet unmet workforce-development needs, what process should it use to recommend and approve new programs?

## Community College Baccalaureate Programs in Texas

Community college baccalaureate programs are not new in Texas. In 2003, the state authorized the three community colleges of Brazosport College, Midland College, and South Texas College to each offer as many as five baccalaureate programs. The programs had to be approved by the THECB, and the community colleges themselves had to be authorized by their regional accrediting agencies to become baccalaureate-granting institutions. After a two-year approval process, the institutions began enrolling students in fall 2005 in the following Bachelor of Applied Technology programs.

- **Brazosport College**—Management of Operation/ Production Technicians
- **Midland College**—Organizational Management
- **South Texas College**—Computer and Information Sciences, Technology Management, Medical and Health Services Management, and Organizational Leadership

In 2010, the THECB and three external consultants conducted a study (as mandated by the Texas Legislature) and found that each of these community colleges had a strong commitment to the baccalaureate degree and to the quality of its programs. Graduates and their employers seemed satisfied with the education received. Nevertheless, the study also revealed several concerns, particularly about the costs, both startup and ongoing, that institutions incur when they implement baccalaureate degree programs.



# Study Methodology

To support the state in determining whether community college baccalaureate offerings should be expanded, we first needed to ascertain whether Texas has unmet workforce needs that such programs could address. Based on input from the presidents and provosts of all Texas community colleges, we elected to focus our study on five fields (Figure S.1): nursing and four applied science fields:

- Computer and information technology
- Management in fire sciences
- Management of production/operations technicians
- Health information technology

Figure S.1. *The Five Degree Fields of Focus*



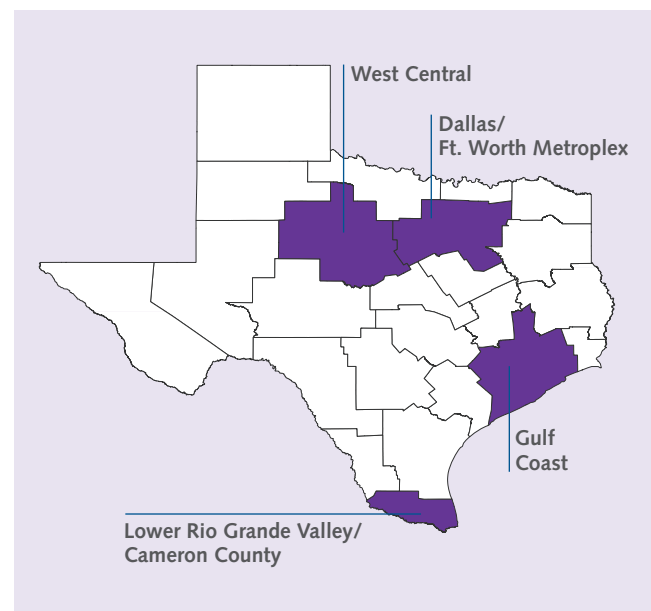
We also elected to focus on four distinct regions of Texas, which were chosen to represent the state's range of policy and workforce environments. We identified two regions with large urban centers and two regions that represent rural or otherwise distinct regions, and we conducted more detailed, deep-dive analyses within them. These regions (Figure S.2) are:

- the Dallas–Fort Worth region;
- the Gulf Coast region, including Houston and surrounding areas;
- the region of South Texas stretching from Laredo to Brownsville; and
- the West Central Texas region surrounding Abilene.

We visited the four regions in January and February 2014, spending one week in each to speak with a wide variety of stakeholders. We interviewed more than 300 people in total, including employers as well as institutional leaders and departmental experts at universities and community colleges (Table S.2). We also conducted literature reviews and surveys and analyzed quantitative data from the Texas

Workforce Commission, the American Community Survey, the Texas Department of State Health Services, the Integrated Postsecondary Education Data System, the College Board, and other sources.

Figure S.2. *The Four “Deep-Dive” Regions*



**Table S.2.** Number of Stakeholders Interviewed for the Study, by Affiliation and Location

Stakeholder Group	Organizations	Participants
Two-year colleges	13	231
Public universities	14	60
Private universities	2	2
Employers	25	25
Other labor market and professional experts	8	8
Accreditation agencies	1	1
Other states	4	11
<b>Total</b>	<b>67</b>	<b>332</b>

Given the time and resources available for the study, we faced a number of limitations. In assessing unmet workforce-development needs, we looked closely at several indicators of supply and demand, but we did not conduct a full assessment of shortages. RAND and HEPI are currently working on a study, also mandated by the Texas Legislature, to develop a workforce model to improve the ability of the state to identify the occupations with the greatest unmet needs. To assess unmet workforce-development needs, we considered:

- Do positions with unmet needs require a baccalaureate degree?
- What is the level of demand for candidates with baccalaureate degrees?

- What are the current sources and supply levels of candidates with baccalaureate degrees?

Although we spoke with a large number of stakeholders in our interviews and focus groups, we were unable to capture the perspectives of many more people inside and outside of Texas. Our analysis focused on just four regions of Texas, and there are likely to be some issues not raised here that are important elsewhere in Texas. Finally, we note there is limited objective evidence regarding many of the potential benefits and concerns related to community college baccalaureates, so we relied heavily on stakeholder perspectives.





# Findings on Unmet Workforce Development Needs

Our analysis identified a number of workforce-development issues.

**Nursing.** Texas, like many other states, is facing serious nursing shortages. The 2010 recommendation of the Institute of Medicine that 80 percent of registered nurses (RNs) hold a Bachelor of Science in Nursing degree (BSN) has placed particular pressure on the demand for baccalaureate-degreed nurses. The demand for BSN nurses is particularly strong in urban areas, where the focus on meeting the 80 percent target is the greatest. Even maintaining the state's current 50 percent proportion of registered nurses holding BSN degrees will require that colleges continue to graduate 4,800 degree-holders each year. Increasing that proportion to 80 percent will require a substantial expansion of BSN programs.

**Computer and information technology.** Computer and information technology occupations increasingly demand knowledge, skills, and attributes beyond what can be provided in a 60-credit hour associate degree program, although associate degrees and advanced certificates still provide a common means of entry to these high-demand occupations. Compared with the level of demand, there are few information technology programs targeted at developing applied skills at universities, and traditional computer science programs do not focus on the applied skills needed in these occupations. Student demand, however, appears to be low, which presents a barrier to higher production. It is essential that any new programs address the pipeline issue.

**Management in fire sciences.** Management positions in fire sciences occupations—the supervision of firefighting and fire prevention—increasingly require candidates to hold bachelor's degrees, but Texas currently has no specific programs in the management of fire sciences. The Bachelor of Applied Arts and Sciences (BAAS) programs that are offered at universities might be able to meet these needs if universities offer a few industry-specific courses, but those courses may not provide the level of fire sciences proficiency

that employers seek. A modest demand for baccalaureate degrees in fire sciences is spread around the state, so programs would need to draw from students statewide, likely through distance learning. A key limitation to sustaining or expanding programs is that working firefighters, who will generate the demand for these programs, are exempt from paying tuition for such courses.

## **Management of production/operations technicians.**

Those who manage production/operations technicians typically progress through their careers after earning an associate degree. For these technicians to move into management positions, some employers require baccalaureate-level education in leadership and business. The modest demand for these occupations is concentrated in specific regions, especially the Gulf Coast, and in specific industries or by large employers. Similar to fire sciences, BAAS programs at universities may be able to meet these needs but may not be able to provide the level of industry-specific proficiency that employers prefer. Baccalaureate-granting community colleges and a few of the regional universities offer more targeted programs that also can meet this need.

**Health information technology.** Health information technology accounts for several different occupations, including medical records coding, health information system design, and health information management. Medical records coding positions are unlikely to require education beyond the associate level. Occupations in the design of health information systems and system management typically require a graduate degree. The increasing use of information technology is driving new demands, but it is not clear that these changes will necessarily lead to new demand at the baccalaureate level. Employers and some community college stakeholders noted a preference for students entering graduate education in health information technology to hold degrees in nursing or information technology. In short, new baccalaureate programs in health information technology do not appear to be needed.

# Potential Benefits of Community College Baccalaureate Expansion

Texas could realize a range of potential benefits from expanding community college baccalaureate programs. We identified the benefits described below from both the literature and our interviews.

**The ability to help meet workforce needs.** Community colleges may be well suited to meet local workforce needs because of their connections with employers, their flexibility in creating and modifying programs, and the geographic mobility patterns of their graduates. We found that, compared with universities, community colleges generally have a stronger connection with employers and a greater demonstrated willingness to work with employers to create programs that directly meet a workforce need. Some regional universities have placed an emphasis on workforce relationships and applied program development, but most universities have not made this a priority to the degree that most community colleges have. Community college stakeholders argue that because they attract working adults, their baccalaureate graduates may be more likely to remain in the region and help meet local workforce needs, but increased degree attainment also could motivate graduates to migrate to areas with high demand.

**Community colleges could help meet workforce needs in applied fields and expand access to baccalaureate-level education.**

**The potential for increased student access and degree attainment.** There are several reasons why community colleges may appeal to students who otherwise would not pursue a baccalaureate degree: their lower cost relative to universities, their flexibility in course scheduling and delivery, their open-enrollment policies, and the ability for students to make a seamless transition from an associate program to a bachelor's program within the same institution. We found that, compared with universities, community colleges serve a more diverse, nontraditional

student population and, therefore, may attract students who otherwise might not pursue a baccalaureate-level education. Evidence from Washington and Florida suggests that community college baccalaureate programs have continued to attract students who are distinct from university baccalaureate enrollees. The evidence suggests that if Texas community colleges implement baccalaureate programs on a larger scale the community colleges would likely continue to offer low costs, flexible scheduling, and seamless transitions. Although community colleges offer open enrollment in their two-year programs, they may choose to establish more restrictive enrollment policies for baccalaureate programs. We note that the increased access provided by community colleges may differ by field and region.

**Greater experience with applied education.** Applied education encompasses certificate, associate, and bachelor's degrees in applied technical or vocational fields. Such education is contextualized within specific occupations and is primarily targeted toward preparation for employment. Community colleges may have more expertise than universities in delivering applied education. The baccalaureate programs of community colleges often build directly on associate-level programs and require a clear understanding of workforce needs. The advantage of community colleges in applied education, however, may be weaker in the field of nursing, where many universities offer programs.

**A small, supportive environment for students.** Particularly in small, specialized programs such as the potential baccalaureate programs, community colleges (and some universities) typically offer students small class sizes and close interactions with instructors and other students. These close interactions can be a source of student support. Because academic counseling departments at both community colleges and universities are severely understaffed, meeting student needs is a challenge at all types of institutions. While there is variation in size across both community colleges and universities, the smaller average class and cohort size in community colleges, particularly in the baccalaureate programs, could help to support students' needs.



## Concerns About Community College Baccalaureate Expansion

Many stakeholders we spoke with in Texas contended that benefits of community college baccalaureate expansion would be outweighed by concerns associated with these programs and their potential negative effects on the higher education system. We identified the concerns described below from both the literature and our interviews.

**Mission creep at community colleges.** Mission creep was the most commonly cited concern. Many stakeholders fear that community college baccalaureate expansion would shift focus away from certificate and associate degree programs, increase costs for all students, and threaten some open-enrollment policies. The evidence for mission creep is mixed. Although there has been rapid growth of community college baccalaureate programs in Florida and Washington, these programs continue to account for a very small portion of community college enrollment in these states. Additional research and monitoring are needed to determine whether mission creep will lead to long-term problems for Texas higher education. Evidence does not support fears that expansion of community college baccalaureate programs will affect tuition costs across most institutions, even though one of the baccalaureate-granting community colleges in Texas has seen a large increase in tuition costs relative to other institutions in

the state. Community colleges are unlikely to retain open-enrollment policies for baccalaureate programs, but this may not necessarily be related to mission creep as much as to higher admissions standards necessary to ensure that students are prepared for baccalaureate-level education.

**Counterproductive competition between universities and community colleges.** Specific concerns involved competition between universities and community colleges to attract upper-division students, faculty, and other limited resources; competition for state funding; and damage to existing university–community college partnerships. The degree of competition is likely to vary substantially by field and region. Duplication concerns are particularly strong in fields such as nursing, where universities offer programs. The recent expansion of RN-to-BSN programs in universities, combined with the challenges that university programs face in recruiting qualified faculty, suggests that community college programs may ultimately compete with universities for students. This situation also suggests that introducing nursing programs into community colleges might exacerbate faculty shortages to a greater degree than would university expansion. In computer and information technology, there may be competition for a limited supply of students. In

other applied sciences, the level of competition may vary by region. In the areas where regional universities have been proactive about meeting needs, competition from community colleges may damage existing programs, but in other areas of the state, it is clear that needs are being underserved and community college programs would be unlikely to generate counterproductive competition.

**Potential benefits of community college baccalaureate programs may be outweighed by concerns about mission creep, counterproductive competition, and quality.**

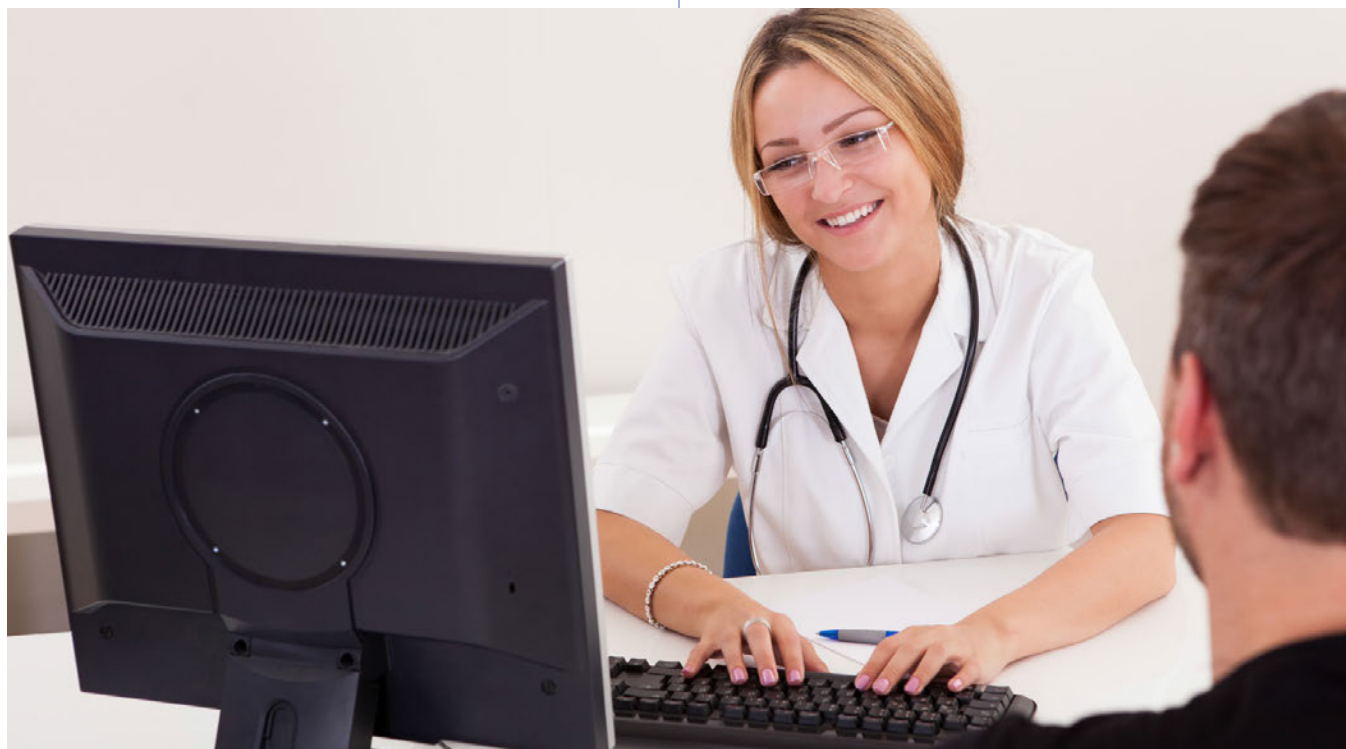
**A decline in the overall quality of the Texas baccalaureate.** Specific concerns about the ability of community colleges to produce baccalaureate degrees of equivalent value to those offered at universities have two sources. First, some note the challenges community colleges may face in providing the liberal arts courses required for baccalaureate degrees. Second, some question whether employers and graduate programs would accept community college–conferred baccalaureates. (We found little evidence among employers and graduate programs to support the latter concern.) In occupations that demand the knowledge, skills, and abilities associated with a broad liberal arts education, community colleges may not be able to match the quality provided by universities. Nevertheless, as previously noted, community colleges may have an advantage over universities in serving occupations that demand applied skills

## Ongoing Efforts to Meet Workforce Needs

In addition to considering the benefits and concerns associated with community college baccalaureate programs, decisionmakers also must consider other options to meet workforce needs and the ways in which community college baccalaureate expansion might complement or compete with them. Many universities and community colleges are currently partnering to improve students' access to bachelor's degrees by establishing articulation agreements, implementing simultaneous enrollment programs, or offering upper-division

university courses at community college campuses or regional higher education centers.

Stakeholders thought it was vital that any new policy not undermine these ongoing efforts. They also argued that new community college programs should be developed, particularly when existing pathways fail to meet workforce needs.





## Costs and Funding

In evaluating options, decisionmakers must consider both the cost of various options for expanding baccalaureate production and the allocation of those costs across different funding sources. Stakeholders disagreed on the relative costs of options, with both community colleges and universities claiming advantages in some situations.

Financial records from two Texas community colleges with experience offering bachelor's degrees indicate that these colleges have been able to cover their identified operating costs from tuition revenue and state reimbursement. The colleges did experience significant startup costs both for institutional upgrades to meet accreditation requirements and for normal program startup costs until a full complement of students enrolled. The state provided each college with \$1.2 million in special funding, which appears to have covered the startup costs at the two colleges we reviewed. Startup costs for future programs are expected to be lower because there will be no, or low, institutional costs.

Although community colleges have set upper-division tuition above the lower-division rate, it remains only one-half to two-thirds the cost of state university tuition. Thus, community colleges have been more affordable for students. To date, community colleges have been receiving the same state reimbursement for upper-division courses that universities receive. If the state lowers that reimbursement rate in the future, students or local taxpayers could face increased costs.

Our analysis did not examine the indirect costs for facilities and central administration that growing baccalaureate programs may require (and, indeed, at least one college now has built facilities with local funding). More detailed analysis of the full costs of expansion, including indirect costs, is needed to ensure that expansion of baccalaureate programs occurs at the institutions that can meet workforce needs most efficiently.

# Policy Options for Community College Baccalaureate Expansion

Essentially, Texas has three major policy options to consider:

1. Make no significant policy changes.
2. Authorize community college baccalaureate expansion without special restrictions beyond those imposed by accreditation standards and THECB program approval.
3. Authorize community college baccalaureate expansion with restrictions.

Although there was substantial disagreement among stakeholders about the best path forward for Texas, we found consensus around six general principles that should guide the selection of policy options related to community college baccalaureates:

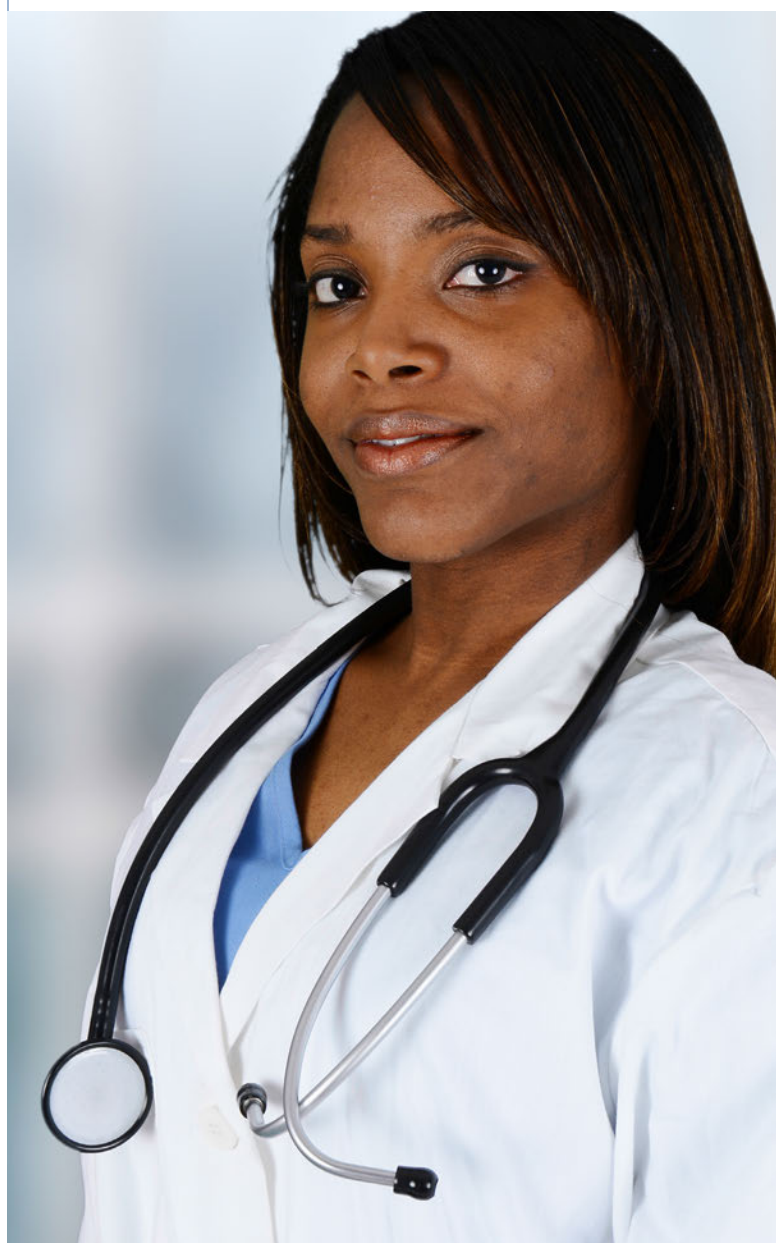
1. Meeting unmet workforce needs should be a priority.
2. The state and students should realize some benefits from any new program.
3. Any policies limiting the scope of community college bachelor's degrees should seek to address concerns such as mission creep and duplication of efforts without unnecessarily limiting benefits such as student access to expanded programs.
4. Policies should complement and promote investments in other pathways, particularly university–community college partnerships.
5. Decisions about policy should consider costs.
6. Policies should be fair and transparent.

Authorizing community college baccalaureate expansion within specified limits would strike a balance between potential benefits and concerns. Some possible policies might:

- limit the scope of provision statewide by setting restrictions on fields or degree types, or on the number of programs offered by each community college;
- limit the scope of provision regionally by allowing universities the opportunity to develop programs first or requiring increased evidence of need when programs overlap;

- require additional planning or monitoring by limiting the number of community colleges initially authorized to offer baccalaureate programs, requiring self-studies for all proposals, or conducting follow-up studies to monitor quality and mission creep; or
- change financial arrangements by limiting reimbursement rates or changing the source of funding.

Any decision regarding community college baccalaureate expansion will necessarily involve difficult tradeoffs, balancing the potential benefits of expansion with the concerns that expansion raises.



# Recommendations for Processes and Supporting Activities

In the course of our research, we identified a number of supporting activities that the state could pursue to address some concerns about mission creep, counterproductive competition, and threats to quality. Some of these activities would be valuable even without expansion of community college baccalaureate programs; others would be appropriate only if expansion occurs.

**Clarify different degree types.** Texas currently has three different types of applied baccalaureate degrees, and there is confusion about the distinctions between different degree types. As the applied baccalaureate expands in the state of Texas, students and employers would benefit from a well-defined set of degree types and a clear understanding of the student and workforce needs that are met by a degree to ensure some consistency and transparency across programs.

**Clearly define fields of study.** The legislature has suggested community colleges focus on the applied sciences, yet there is no clear definition of applied science fields. If community colleges are authorized to propose baccalaureate degrees in the applied sciences, it is essential that a clear definition of each field be adopted to guide all parties.

**Continue to use THECB criteria for program approval.** Most stakeholders agreed that the criteria for program approval should be the same for universities and community colleges, but university stakeholders also argued for restrictions on the types of programs that community colleges can offer. Community college stakeholders asked that the process for program approval be transparent and that the criteria for program approval be applied fairly.

**Coordinate proposals across institutions when demand is limited or resources are constrained.** When student demand is limited across the state, or there are resources that could be seriously strained by approving too many programs, comparing proposals from all interested institutions can identify the best approach.

**Provide guidance and mentoring to community colleges.** The three existing Texas community colleges that confer baccalaureate degrees can be valuable guides for future colleges; future colleges also can support each other through networking and mentoring arrangements.

**Conduct more empirical analyses.** More detailed analysis of costs, outcomes, and mission creep would be very valuable in understanding the tradeoffs Texas faces and in improving decisionmaking in the future.



# Conclusion

Our review of evidence from Texas and other states highlighted a number of benefits that community college baccalaureate programs could offer but also raised several concerns.

We found a range of situations across the five specific occupations we examined, with some occupations experiencing major shortages of workers that community colleges might be able to address and others in which there is either no clear shortage or no clear need for an industry-specific bachelor's degree.

The state has three broad options related to community college baccalaureate programs:

1. It can rely on the existing arrangements with no new community colleges authorized to add baccalaureate programs.
2. It can expand the number of community colleges authorized to add baccalaureate programs without any restrictions other than those imposed by the existing requirements to receive regional accreditation and THECB program approval.
3. It can expand authorization of baccalaureate programs under some specific limitations, which could address the concerns raised by expansion but also might limit the benefits of expansion.

These policy choices necessarily involve difficult tradeoffs.







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# Abbreviations

<b>ACS</b>	American Community Survey
<b>ADN</b>	Associate Degree of Nursing
<b>APIN</b>	Academic Progression in Nursing
<b>BAAS</b>	Bachelor of Applied Arts and Sciences
<b>BAS</b>	Bachelor of Applied Science
<b>BAT</b>	Bachelor of Applied Technology
<b>BSN</b>	Bachelor of Science in Nursing
<b>DFW</b>	Dallas–Fort Worth
<b>DNP</b>	Doctor of Nursing Practice
<b>KSA</b>	knowledge, skills, and abilities
<b>O*NET</b>	Occupational Information Network
<b>RN</b>	registered nurse
<b>SACS-COC</b>	Southern Association of Colleges and Schools Commission on Colleges
<b>THECB</b>	Texas Higher Education Coordinating Board
<b>TWC</b>	Texas Workforce Commission
<b>WDA</b>	Workforce Development Area

# 1 Introduction

From 2000 to 2010, the annual number of undergraduate degrees awarded in the United States increased nearly 40 percent, with more than 800,000 associate degrees and 1.6 million bachelor's degrees awarded in 2009–10 (NCES, 2012a). In Texas, the annual number of undergraduate degrees awarded has increased at an even faster pace, jumping from 116,000 in 2001 to 186,000 in 2011 (THECB, 2012a). Yet there remains a need to increase educational attainment to meet the demand for baccalaureate-degreed workers (Achieve, 2012; Deloitte and the Manufacturing Institute, 2011; Faberman and Mazumder, 2012). Increasing human capital also can increase individual income and employment satisfaction and yield broader societal benefits. Yet many students, particularly those who are working adults or have low income, face several challenges in completing degree programs.

There are many different approaches to meeting the needs of employers, individuals, and society for increased educational attainment. Traditionally, the community college provided the first two or three years of education and awarded associate degrees, which allowed students to transfer to universities and complete baccalaureate degrees. Now the community college is increasingly becoming a way to provide baccalaureate-level education. In 2003, the state of Texas authorized three community colleges—Brazosport College, Midland College, and South Texas College—to offer baccalaureate degrees in the applied sciences. These three community colleges now offer a total of seven baccalaureate programs in fields such as organizational management, health administration,

and computer and information technology and have produced more than 600 graduates with Bachelor of Applied Technology (BAT) degrees.

Supporters of community college expansion argue that current higher education pathways are not sufficiently meeting workforce needs, and there is a demand for new opportunities for baccalaureate-level education to meet local workforce needs. Community college baccalaureate programs also offer individuals more ways to improve their knowledge and skills and to attain career credentials. Other stakeholders, however, contend that offering baccalaureate programs may affect the ability of community colleges to continue

-serving their traditional mission and create counterproductive competition with universities over students, state funding, and other limited resources (Floyd, 2006; Russell, 2010).

To assess the implications of expanding community college baccalaureate-degree programs in Texas, the Texas Legislature in May 2013 approved Senate Bill 414, mandating a study on regional need for community college baccalaureate programs and to identify the metrics for determining such needs, with a focus on potential baccalaureate programs in nursing and specified applied fields.

The Texas Higher Education Coordinating Board (THECB) asked the RAND Corporation to partner with the Texas Higher Education Policy Initiative (HEPI) to conduct a study with the following objectives:

- Assess unmet workforce-development needs for baccalaureate-degreed individuals in nursing and the applied sciences.
- Assess the arguments for and against baccalaureate expansion and other key evidence to support THECB and legislative policymaking related to community college baccalaureate expansion.
- Recommend potential activities to support implementation of any new policies undertaken, including possible expansion.

Our work included a literature review, descriptive data analysis, and interviews and focus groups with more than 300 stakeholders in Texas, as well as interviews with stakeholders in several other states.

This report describes the study's findings. In Chapter 2, we provide some background on Texas higher education, applied baccalaureate degrees, and the expanding role of community colleges in baccalaureate-level education. Chapter 3 provides a framework that can be used to model the decisionmaking process for meeting workforce needs through higher education programs, identifies the research questions for the study, and explains the study's methodological approaches and limitations. In Chapter 4, we assess the potential unmet workforce needs of five specific occupations or occupational groups corresponding to the degree fields of nursing, computer and information technology, management in fire sciences, management of science/operations technicians, and health information technology. After identifying unmet workforce needs, we describe the potential benefits of community college baccalaureate programs in Chapter 5. Chapter 6 presents concerns about community college baccalaureate expansion. State policymakers also will want to consider unmet workforce needs, including the alternatives to community college baccalaureate expansion, the cost of the various options, and funding for those options, which we discuss in Chapter 7. Chapter 8 describes the range of policy options that the state can consider in addressing the issue of community college baccalaureate expansion, and it outlines some principles on which to base these decisions. In Chapter 9, we make recommendations for the processes and implementation efforts that should be considered to support state policy decisions. Finally, we conclude with a brief summary of the study's findings and the implications for community college baccalaureate expansion in Texas.

# 2 Background

We begin with some background on the Texas higher education system and the national landscape for community college baccalaureate programs. We first describe the roles of different types of institutions in Texas. We then discuss the role of the applied baccalaureate in Texas. Next, we discuss the national movement toward increased provision of baccalaureate programs by community colleges, and the history of community college baccalaureate programs in Texas.

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## The Role of Texas Institutions

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### Community Colleges

Public community colleges enroll a substantial number of college students; in fall 2010, 26 percent of all full-time college students and 64 percent of all part-time college students were enrolled in public community colleges (NCES, 2012a). Public two-year institutions across the United States granted nearly one million degrees and certificates in 2010–11 (NCES, 2013). Community colleges provide particularly important pathways into higher education for nontraditional students, with nearly 90 percent of community college students meeting at least one definition of nontraditional: delaying enrollment into postsecondary education (with 46 percent not enrolling until at least age 20), attending part-time, being financially independent of parents, working full

time while enrolled, having dependents other than a spouse, or lacking a standard high school diploma (Choy, 2002; Berkner and Choy, 2008). Community colleges are the most common entry to postsecondary education for first-generation students from low-income families, 57 percent of whom start at a two-year institution.

Higher education programs fall into two broad categories: academic programs and workforce-development programs. Academic programs lead to associate, bachelor's, and graduate degrees in fields such as the arts, sciences, engineering, and education. Workforce-development programs lead to certificates or associate or bachelor's degrees in technical or vocational fields and typically are contextualized within a specific occupation. These fields

include technologies related to production, maintenance, and repair; technical healthcare specialty roles such as radiology technician and dental hygienist; and service fields such as cosmetology and culinary arts. In some cases there may be some overlap between academic and workforce-development programs. For example, aspects of management may be addressed by an academic business degree or by a workforce degree in applied organizational leadership.

Community colleges offer both academic programs and workforce-development programs. Community college academic degrees and programs offer an affordable, open-access pathway to complete all or part of the first two years of a bachelor's degree and then transfer to a university to complete that degree. Workforce-development programs at community colleges prepare students directly for employment in an applied or technical field.

**Within Texas, more than 60 percent of college enrollees begin at community colleges or technical colleges.**

According to Rudd and Bragg (2010, p. 13), "an overarching function of the community college is to respond and react to the needs of the surrounding community." Many community college mission statements specifically identify the local community as a priority. Community colleges in Texas and many other states are governed by local boards and draw significant public funding from the local community.

**Table 2.1.** Texas Postsecondary Student Characteristics, by Institution Type

Characteristic	Two-year	Four-year
<b>On Pell Grant</b>		
Yes	35.1%	40.4%
No	64.9%	59.6%
<b>Status</b>		
Full-time	26.6%	78.1%
Part-time	73.4%	21.9%
<b>Gender</b>		
Male	41.8%	45.9%
Female	58.2%	54.1%
<b>Ethnicity</b>		
White	37.0%	42.3%
African American	14.1%	12.0%
Hispanic	38.9%	29.7%
Asian	4.3%	6.7%
International	1.9%	6.0%
Other	3.8%	3.3%
<b>Age</b>		
Younger than 18	14.7%	1.9%
18–21	39.6%	58.8%
22–24	13.2%	20.3%
25–29	12.0%	9.3%
30–34	7.5%	4.1%
35 or older	13.0%	5.6%

SOURCES: THECB, 2013a; THECB, 2013b.

Technical colleges provide another means of access to workforce-development programs. According to Section 135.01 of the Texas Education Code, technical colleges were “designed to provide vocational and technical education to people entering the workforce or in the midst of a career change.” These institutions offer programs that look similar to many of the programs at community colleges, and serve similar populations of students.

Within Texas, more than 60 percent of college enrollees begin at community colleges or technical colleges (THECB, n.d.). As Table 2.1 suggests, two-year community colleges in Texas serve a somewhat different population than that served by the state’s four-year universities, with enrollees who are much more likely to attend part-time, be low-income or Hispanic, or be 25 or older.

## Public and Private Universities

Texas universities and private colleges focus on providing baccalaureate and graduate education. Universities have long been the primary provider of baccalaureate degrees. These institutions concentrate on academic programs, although some also offer applied workforce-development programs at the baccalaureate level. The public regional universities often provide a combination of academic and workforce programs and often serve a population that is drawn largely from the local population, so there is significant crossover

with community colleges. Universities often aim to prepare students for the state, national, or global workforces, and they place much greater emphasis on advancing research than community colleges. Public research universities tend to focus almost exclusively on academic education. Universities often aim to prepare students for the state, national, or global workforces, and they place much greater emphasis on advancing research than community colleges. In Texas and many other states, public universities are managed by statewide boards and receive public funding from the state rather than localities.

Private institutions also play a significant role in higher education in Texas and the U.S., with private nonprofit institutions accounting for 30 percent of all baccalaureate degrees awarded, and private for-profit institutions accounting for seven percent (NCES, 2012b). The role of for-profit colleges has grown at a particularly rapid pace in recent years, accounting for more than 11 percent of all enrollment in 2009, compared with just four percent of enrollment in 2000 (Baum and Payea, 2011). Many for-profit programs offer a number of associate and certificate-level programs in addition to meeting baccalaureate needs. Some suggest that the movement of for-profit institutions into the higher education sector provides evidence that public institutions are not sufficiently meeting the needs of employers and students.

# Applied Baccalaureate Degrees in Texas

In recent decades, there has been greater demand among students for educational credentials in both academic and workforce-preparation programs. Changing workforce needs and increased demand for advanced skills require individuals with additional educational preparation. The state also seeks increased educational attainment to improve the wellbeing of residents, increase economic growth, and attract high-skill industries to the region. In academic fields, the demand for educational credentials has led to higher entry-level requirements, greater enrollment, and increased numbers of students seeking graduate degrees. For programs that focus on workforce preparation, demand for educational credentials has led to an increasing demand for the applied baccalaureate.

Texas has a long history with the applied baccalaureate. Some of its universities have provided this degree for more than 30 years, and three community colleges have provided them for the past decade (THECB, 2009). Applied baccalaureate programs can contribute to goals of increased higher

education participation and success (THECB, 2010b, p. 7). Applied baccalaureate programs seek to close enrollment and graduation gaps and to allow technical students to achieve the skills needed for career advancement by:

- overcoming the “terminal” character of the Associate of Applied Science (AAS) degrees;
- creating seamless transitions by allowing students to use a block of technical courses from AAS degrees as a major or concentration in an applied bachelor’s program; and
- providing coursework that builds on the technical expertise of applied students.

The THECB defines applied baccalaureates as “generally flexible degrees that usually involve large transfers of credit, sometimes in the form of an associate degree” (THECB, 2009, p. 4). For all baccalaureate programs, including the applied baccalaureate, the THECB requires that applied baccalaureates contain at least



24 semester credit hours of upper-level coursework, meet the 42 credit hour general education core requirement, and ensure that all courses be taught by properly credentialed faculty (THECB, 2009, p. 6). Applied baccalaureate programs typically are offered through face-to-face, blended (face-to-face and online), and online learning platforms to ensure that they are accessible to nontraditional students (e.g., older students or students working during college). In addition, applied baccalaureates are attractive to many students because they may grant credit for both previous coursework and experiential credit (THECB, 2009, p. 4).

Applied baccalaureate programs in Texas fall into three different categories: Bachelor of Applied Sciences (BAS) programs, Bachelor of Applied Arts and Sciences (BAAS) programs, and Bachelor of Applied Technology (BAT) programs. The specific applied baccalaureate type varies by the preferences of each institution, the level of the institution, and the subject matter of the program (THECB, 2009). Table 2.2 presents the number of 2013 graduates for all of the applied baccalaureate programs in Texas. BAAS programs are the most common, with 18 universities offering these programs, while BAT and BAS programs are less common, with just five institutions offering BAT programs and three institutions offering BAS programs.

Both universities and community colleges play important roles in providing applied baccalaureate degrees in Texas. THECB data indicates that 1,741 students graduated from universities with applied degrees in 2013. Though the total numbers are small relative to the number of graduates from other baccalaureate programs, Texas universities produce more applied baccalaureate graduates than many other states. Washington, for example, had little experience with the applied baccalaureate prior to developing community college baccalaureate programs, and Washington universities were not particularly interested in applied baccalaureates, despite demonstrated workforce needs for such programs. Nearly 90 percent of applied baccalaureate graduates from universities in Texas graduate with an interdisciplinary BAAS degree.

As noted, three Texas community colleges are currently authorized to grant bachelor's degrees, specifically the BAT degree. These programs graduated a total of 166 students in 2013, so community colleges currently account for less than 10 percent of all applied baccalaureate degrees in Texas.

BAAS programs are typically described as inverted degrees that allow students with technical or applied associate degrees to advance their education. The associate degree

serves as the student's major, and the BAAS coursework includes completion of general education requirements and the selection of a student-determined focus from a broad multidisciplinary menu of upper-division courses. The upper division courses taken in these general BAAS degrees are selected from the universities existing pool of courses, so students often take academic courses together with students in academic baccalaureate programs.

BAT and BAS degree programs, by contrast, have a more clearly defined course of study, typically preparing individuals for employment in a particular occupation. The coursework in these programs is often distinct from the coursework required for comparable academic degree programs, with a more clearly applied focus. For example, the Texas A&M University-San Antonio applied baccalaureate concentration in information security features contextualized subjects like network security and computer forensics, whereas the university's academic computer science degree focuses on the theoretical foundations of software development. The area of business provides another example. Academic baccalaureate degrees in business administration include finance and accounting, and the courses may focus to a greater degree on business theory, whereas applied baccalaureate programs in organizational leadership typically exclude finance and accounting and focus on skills like human resources and interpersonal relations that are required for day-to-day management of employees.

Some universities offer programs that they label BAAS programs, but are virtually indistinguishable from BAS and BAT degrees in that they allow students to build advanced applied skills in a particular well-defined course of study. For example, the BAAS program in Information Technology at Tarleton State University is very similar to the BAT program in Computer Information Systems Technology at the University of Texas (UT) at Brownsville. Of the applied baccalaureate graduates in Texas in 2013, 77 percent graduated with a BAAS from a multidisciplinary program, three percent graduated from multidisciplinary BAS programs, and 20 percent graduated from more targeted BAAS, BAS, and BAT programs with clearly defined programs of study.

The differences between BAAS, BAT, and BAS degrees are not well defined, and the understandings of these differences vary widely across stakeholders. As of early 2014, the BAT was the only degree type included in the THECB's definition of an applied baccalaureate program, described as the "degree offered at community colleges" (THECB, 2012, p. 9). However, the BAT was first offered at UT-Brownsville and continues to be offered at two universities in Texas. As described above, a

substantial distinction between BAT/BAS programs and many BAAS programs is that the BAAS programs are meant to be general and multidisciplinary, while BAT and BAS programs have a more focused course of study. However, as noted, BAAS programs at some institutions do have a specific focus, and some BAT programs have begun to look more like general management programs. Other stakeholders argue that BAT programs are applied baccalaureates at community colleges,

while BAS and BAAS programs are applied baccalaureates at universities. Stakeholders from one institution distinguish BAS and BAT degrees by noting BAS graduates can pursue graduate studies, but other interviewees note that graduates from BAT programs at UT–Brownsville and South Texas College are strongly encouraged to pursue graduate education and a substantial proportion of graduates have been accepted to graduate programs.

**Table 2.2.** *Number of Applied Baccalaureate Graduates, by Field, Institution, and Degree Type in Texas, 2013*

Institution Name	Degree Type	No. of Graduates
<b>Multidisciplinary/Interdisciplinary Studies</b>		
Lamar University	BAAS	171
Midwestern State University	BAAS	84
Sam Houston State University	BAAS	41
Stephen F. Austin State University	BAAS	15
Texas A&M International University	BAAS	7
Texas A&M University–Central Texas	BAAS	17
Texas A&M University–Commerce	BAAS	144
Texas A&M University–Corpus Christi	BAS	37
Texas A&M University–Kingsville	BAAS	17
Texas A&M University–San Antonio	BAAS	123
Texas A&M University–Texarkana	BAAS	60
Texas State University	BAAS	106
University of Houston–Clear Lake	BAS	24
University of Houston–Downtown	BAAS	18
University of Houston–Victoria	BAAS	53
University of North Texas	BAAS	462
University of Texas at Brownsville	BAAS	65
University of Texas at Tyler	BAAS	7
University of Texas–Permian Basin	BAAS	4
West Texas A&M University	BAAS	67
<b>Total</b>		<b>1,522</b>
<b>Business, Management, and Leadership</b>		
Brazosport College	BAT	18
Midland College	BAT	25
South Texas College	BAT	54
Tarleton State University	BAAS	25
University of Texas at Brownsville	BAAS	24
University of Texas at Brownsville	BAT	4
<b>Total</b>		<b>150</b>

Table 2.2. Number of Applied Baccalaureate Graduates, by Field, Institution, and Degree Type in Texas, 2013 (continued)

Institution Name	Degree Type	No. of Graduates
<b>Computer-Related Programs</b>		
South Texas College	BAT	34
Tarleton State University	BAAS	20
University of Texas at Brownsville	BAT	28
<b>Total</b>		<b>82</b>
<b>Criminal Justice and Public Administration</b>		
Tarleton State University	BAAS	16
University of Houston–Downtown	BAAS	4
West Texas A&M University	BAAS	20
<b>Total</b>		<b>40</b>
<b>Health Sciences</b>		
South Texas College	BAT	35
Tarleton State University	BAT	1
Texas Woman's University	BAS	5
University of Texas at Brownsville	BAT	29
<b>Total</b>		<b>70</b>
<b>Production and Operations</b>		
Tarleton State University	BAAS	20
University of Houston–Downtown	BAAS	11
<b>Total</b>		<b>31</b>
<b>Other</b>		
Texas Woman's University	BAS	2
University of Texas at San Antonio	BAAS	11
<b>Total</b>		<b>13</b>

SOURCE: THECB analysis of internal 2013 data.

## Community College Baccalaureate Programs

Several efforts over the past 25 years have sought to expand the role of community colleges in baccalaureate-level education. In 1989, West Virginia became the first state to authorize community college baccalaureate programs, with one such institution in the state now offering six approved programs (Community College Baccalaureate Association [CCBA], 2013). As of early 2014, 17 states had authorized

community college baccalaureate programs (CCBA, 2013). Across these states, the proportion of community colleges offering baccalaureate programs varies widely, with Idaho authorizing such programs but offering none, while most community colleges in Florida and Washington offer baccalaureate degrees.

Community college baccalaureate programs tend to cover four fields: nursing, education, science/technology, and business. Some states limit their community college baccalaureate programs to specific fields, while others place few limitations on the types of programs that can be offered (CCBA, 2013). Community college baccalaureate degrees typically focus on programs that build directly on associate or certificate programs. In some cases, the degrees offered by community colleges look identical to those offered by universities. For example, because of licensing requirements, the Bachelor of Science in Nursing (BSN) conferred at community colleges is identical to that earned at a university. In other cases, community colleges focus on applied programs and offer such degrees as the BAS and the BAT.

## Florida

Florida has the largest number of community college baccalaureate programs in the country, having approved 26 community colleges to offer more than 150 baccalaureate degree programs (CCBA, 2013). However, community colleges continue to play a relatively small role in terms of total degrees awarded, accounting for only 2.6 percent of Florida baccalaureate degrees (Schneider, 2014). Florida first authorized community college baccalaureate programs in 2001, with the first cohorts of students enrolling in programs that included nursing and the applied sciences (Russell, 2010). In 2007, the Florida Legislature amended House Bill 7147 s. 1007.33, F.S., to allow community colleges to offer degrees in education. Some stakeholders, particularly universities, did not embrace the move toward community college baccalaureate programs, expressing concern about increased competition and the need to provide additional state funding for such programs (Stripling, 2008). Others expressed concern that these programs would divert attention from the community colleges' traditional mission to serve workforce and developmental education needs (Campbell, n.d.).

Separate entities approve baccalaureate programs for Florida community colleges and universities (Smith and Holcombe, 2008). To authorize a community college baccalaureate program, Florida legislation requires a proposal to the State Board of Education that includes demand for the baccalaureate degree program as identified by the workforce development board, local businesses and industry, local chambers of commerce, and potential students; substantiation of unmet need for graduates of the proposed degree program within a particular region; and confirmation that the community college has the facilities and academic resources to deliver the program.

All public degree-granting institutions of higher education in Florida, including community colleges, must also be

accredited by the Southern Association of Colleges and Schools Commission on Colleges (SACS-COC). Community colleges must obtain Level II accreditation before operating a baccalaureate program. In the early stages of proposal planning, community colleges must notify public and private four-year colleges and universities in their service area of their intent to offer baccalaureate degrees. Nevertheless, as we learned in interviews, the universities have had little or no involvement in or effect on the decisionmaking process.

## Washington

Washington State has eight community colleges enrolling students in 10 baccalaureate programs in fields such as radiologic and imaging sciences, applied management, applied design, nursing, and interior design (CCBA, 2013; Washington State Board for Community and Technical Colleges, 2013). Applied baccalaureate programs in Washington originated with the 2005 passage of House Bill 1794, giving the State Board for Community and Technical Colleges (SBCTC) authority to select pilot programs at designated community and technical colleges. Prior to this legislation, the state assessed the need for applied baccalaureate degrees and found little interest among four-year institutions in providing such programs. The pilot programs became permanent with passage of Substitute Senate Bill 6355 in 2010, giving the SBCTC authority to approve degree programs for all community colleges in the state that are able to meet accreditation standards.

Substitute Senate Bill 6355 established objective criteria for evaluating community college applications to offer baccalaureate programs. Community colleges seeking to offer such programs must demonstrate:

- long-term capacity and sustainability of programs;
- the ability to engage qualified faculty to develop and deliver high-quality baccalaureate-level curricula;
- demand for the proposed program from a sufficient number of students within the college's service area (to make the program cost-effective and feasible to operate);
- employer demand for the level of technical training proposed (to make it cost-effective for students to obtain the degree); and
- assurance that the proposed program fills gaps and is not offered by a public four-year university in the community college's geographic area.

## Texas

Community college baccalaureate programs are not new in Texas. In 2003, the state authorized three community colleges—Midland College, Brazosport College, and South Texas College—to offer baccalaureate programs. These community colleges were authorized to provide up to five baccalaureate degrees in applied technology, pending program approval by the THECB and authorization to become a baccalaureate-granting institution by the regional accrediting agency, the SACS-COC. After a two-year approval process, the institutions began enrolling students in fall 2005.

As of early 2014, South Texas College had four BAT programs in computer and information technologies, technology management, medical and health services management, and organizational leadership (a newly authorized program). The computer and information technologies program provides advanced technical skills to build on those developed in associate-level programs, while the three other programs provide management and leadership skills to allow individuals with associate-level technical skills to move into middle management positions. Since 2008, 2,287 students have enrolled in South Texas BAT programs, and the programs have produced 463 graduates.

Brazosport College offers a single BAT program with four tracks: process operations management; business management; safety, health, and environmental management; and general technology management. Similar to the South Texas College management programs, these tracks provide opportunities for individuals with technical associate degrees to obtain the management skills necessary for middle management. A substantial portion of students in the Brazosport program have been petroleum technicians, but the program is intended to serve students in a broad range of industries and occupations. Since 2008, 559 students have enrolled in Brazosport BAT programs, and the programs have produced 80 graduates. In 2014, Brazosport will introduce a new program focused on healthcare administration.

Midland College also offers a single BAT program, organizational management, which, like the programs at South Texas College and Brazosport College, provides training for individuals seeking to move into middle management across a wide range of industries. Since 2008, 513 students have enrolled in the Midland BAT program, and the program has produced 58 graduates.

In 2010, the THECB and a consulting firm, in response to a legislative mandate, evaluated the “success of baccalaureate degree programs offered under the authority of Texas Education Code, Section 130.0012,” examining “existing

community college baccalaureate programs, Texas regional workforce needs, current and potential university offerings, other methods for making baccalaureate degrees available, and the economic viability of expanding the offering of baccalaureate degrees by other community colleges” (THECB, 2010b, p. 4). The study found that each college had a strong commitment to the BAT and to the quality of its programs and identified 16 indicators of program success:

1. Program marketing
2. Program integrity
3. Technology and information resources
4. Overall institutional assessment plans
5. Budget
6. Faculty
7. Advisory boards
8. Student support services
9. Student learning outcomes
10. Employer satisfaction
11. Job placement and advancement of graduates
12. Student satisfaction
13. Enrollment
14. Student-to-faculty ratio
15. Graduation rates
16. Retention

Other quality indicators it identified included engagement in student learning outcomes, typical university faculty-to-student ratios, dedication of the faculty to the baccalaureate programs, and the receipt of promotions by students as a result of program participation. It further suggested two contributors to increased access for students: flexible class schedules and enrollment of a significant number of nontraditional students.

The study also revealed several concerns about expanding community college baccalaureate programs. New programs incur costs in achieving Level II accreditation—a time-consuming and costly process (THECB, 2010b). Faculty may also experience new workload issues and schools may divert resources from other high-priority academic and workforce programs to their new baccalaureate programs. The study concluded that the expansion of university programs, together with the development of online programs (in lieu of additional community college baccalaureate programs), would better leverage higher education funding (THECB, 2010b).

# 3 Research Questions and Methodology

The ultimate question that the THECB must address is whether community college baccalaureate programs should be expanded to additional colleges and fields. RAND and HEPI's role in conducting this study is to explore a range of key policy options and provide information to help the THECB weigh the options. The study team also was asked to provide input on the decisionmaking process that should be used and to assess unmet workforce needs in nursing and the applied sciences. This report presents stakeholder perspectives on community college baccalaureate programs and other information on their possible expansion, assessments of the range of policy options, and suggestions for potential ways forward for Texas.

## Key terms used in this study

**Applied science fields (also called technical fields):** Fields of study that lead to a degree or certificate directly related to specific occupations. These fields are taught in workforce-development programs at community colleges and some universities.

**Applied baccalaureate degree programs:** Programs that allow students with applied associate degrees to complete a baccalaureate degree, either through a general studies degree program or a targeted program that provides a structured degree program in a specific field. In Texas, these degrees are termed BAAS, BAS, and BAT.

**Unmet need in an occupation:** Demand in the workforce for baccalaureate-degreed individuals that cannot be filled by existing supply.

# A Framework for Decisionmaking About Higher Education Expansion

To guide our analysis, we used stakeholder conversations, a literature review, and researcher expertise to develop a framework illustrating four stages of the decisionmaking process (Figure 3.1). The first step is for policymakers to determine whether there is a workforce need and whether a baccalaureate is appropriate for meeting it. If there is a workforce need for more baccalaureate degrees, policymakers should then determine whether there is a sufficient supply of baccalaureate-degree-holders to meet the need. If there is not, then policymakers should focus on identifying the

appropriate way to meet that need. These approaches include starting or expanding university programs, establishing community college baccalaureate programs, or creating partnerships between universities and community colleges. If expanding community college baccalaureate programs is warranted, the question then becomes, “Which specific institution or institutions should expand programs or introduce new programs?” Having a clear decisionmaking process can help determine which programs should be developed and which institutions should develop these programs.

**Figure 3.1.** *The Four-Stage Decisionmaking Framework*



## Research Questions

As we described in Chapter 1, THECB and RAND agreed on three study objectives. Our research questions, outlined in Table 3.1, align with the three study objectives.

**Table 3.1.** *Study Objectives and Research Questions*

Study Objective	Research Question
Assess unmet workforce-development needs in nursing and the applied sciences	Are there unmet workforce-development needs for baccalaureate degrees in nursing and four applied science occupational groups in Texas?
Assess the arguments for and against baccalaureate expansion and other information (e.g., costs) to support THECB and legislative policymaking related to community college baccalaureate expansion	Do community colleges provide an appropriate way of meeting unmet workforce-development needs, particularly those requiring greater baccalaureate production in nursing or the applied sciences?
Recommend potential activities to support implementation of any new policies undertaken to expand the community college baccalaureate	If the state determines community college baccalaureate expansion is an appropriate means to meet unmet workforce-development needs, what process should it use to recommend and approve new programs?

We first explore unmet workforce needs in nursing and the applied sciences. We then seek to provide evidence to help the state determine whether it should support community college baccalaureate expansion, and we outline the policy

options the state faces in addressing such expansion. Finally, we describe the implementation efforts that might be used to support chosen policies, including a process for determining which community college baccalaureate programs to approve.

## Determining the Specific Scope of the Study

Given the accelerated timeline for the study—six months for data collection and analysis—our scope was necessarily limited. We emphasized qualitative methods, particularly stakeholder interviews, to address the research questions. We also conducted quantitative analyses to assess unmet workforce demand and to examine other key topics.

In assessing the benefits of various policy options, it also would be helpful to consider costs. A study comparing the costs associated with expanding or developing a program at a university with those of developing a program at a community college would provide important evidence for decisionmaking, but that level of analysis is beyond the scope of this investigation. We discuss some of these possibilities for additional analysis in Chapter 9.

### Selecting Applied Sciences Fields for the Study

Senate Bill 414 designated nursing and the applied sciences as the key fields of interest for the study but did not provide a specific definition for the applied science fields. Applied science is a subset of the fields that could be considered for applied baccalaureate programs. There also are applied fields outside science (e.g., child care and interior design) that could benefit from baccalaureate programs.

To choose a set of applied science fields for the study, the THECB selected a set of fields and surveyed the presidents and provosts of all community colleges in the state to determine which fields were of greatest interest for potential baccalaureate programs. We selected the four most

commonly chosen ones in order to allow us to complete analysis within the short study timeframe and ensure that sufficient attention could be paid to each occupational group. The four applied science fields we chose to study are:

- computer and information technology;
- management in fire sciences;
- management of production/operations technicians; and
- health information technology.

### Deep Dives into Four Texas Regions

Given the limited timeframe for the study, we decided to focus on four distinct regions, chosen to represent different policy and workforce environments across the state. We defined regions by the Workforce Development Areas (WDAs) designated by the Texas Workforce Commission (TWC). From these, we chose two regions with large urban centers and two regions with less dense populations. To identify regions that might have the greatest workforce needs, we used TWC data to identify potential shortages of registered nurses (RNs). Based on these data and on other considerations, such as demographic variation and variation in institutional coverage, we chose four regions: the Dallas–Fort Worth (DFW) region; the Gulf Coast region, including Houston and surrounding areas; the region of South Texas stretching from Laredo to Brownsville; and the West Central Texas region surrounding Abilene. We visited these regions in January and February 2014, spending one week in each and speaking with a wide variety of stakeholders.



# Interviews with Key Stakeholders

Interviews with key stakeholders in Texas, as well as with experts in several other states, were our primary source of data. Below we describe how we chose interviewees, developed protocols, and analyzed data.

## Interviews in Four Regions of Focus

We interviewed more than 300 persons across the four regions of focus, including employers and institutional leaders and departmental experts at universities and community colleges (Table 3.2). These stakeholders included university

presidents, chief academic officers, deans, department heads, and selected faculty. Each interview was conducted by a team of two or three researchers, and a note-taker was responsible for thoroughly documenting all discussions. After completing the interviews, we conducted two rounds of interview-note analysis. In the initial round, we identified a set of key topics that were frequently raised in the interviews and aligned with our research questions. We then coded each interview, identifying the topics that were raised in each and noting how many times topics were raised across all interviews. This analysis allowed us to identify a number of prominent themes.

**Table 3.2.** Number of Institutions Covered and Stakeholders Interviewed for the Study, by Affiliation and Location

		DFW	Gulf Coast	South Texas	West Texas	Total
<b>Community Colleges</b>	Number of institutions	4	4	2	3	13
	Number of stakeholders	56	84	77	14	231
<b>Public Universities</b>	Number of institutions	4	4	3	2	13
	Number of stakeholders	16	12	16	16	60
<b>Private Universities</b>	Number of institutions	0	0	0	2	2
	Number of stakeholders	0	0	0	2	2
<b>Employers</b>	Number of stakeholders	5	7	9	4	25

The protocols for the interviews were tightly tied to the framework to ensure that the data would sufficiently address the research questions for the study. We also developed protocols that the THECB can incorporate into a sustainable decisionmaking process with minimal resources. For each stage in the framework and for each research question, we identified a number of important sub-questions to address. We built a matrix that crossed these sub-questions and subtopics with the different categories of stakeholders and data sources, and we identified all of the potential sources of

evidence. We developed items for the protocols whenever we believed a stakeholder might have evidence or perspectives that could contribute to our understanding of a topic. We then sorted these items to build logically ordered protocols that were reasonable in length. The stakeholder protocols identified unmet workforce needs, the benefits and concerns associated with community college baccalaureate expansion, and the process by which programs are developed in Texas. Copies of the protocols are provided in the appendix.

## *Two-Year Institutions*

We visited 13 two-year colleges across the regions and spoke to more than 200 stakeholders at these institutions. Visits at each of these colleges lasted between one and six hours, depending on the institution's preferences. Site visits typically began with an interview with one to 10 representatives of institutional leadership. We then interviewed program- and department-level experts on some of the specifics regarding nursing and applied science fields.<sup>1</sup> These interviewees included faculty, deans, student-support specialists, and program administrators. All of the two-year institutions in the study were public community colleges, the focus of the legislation prompting this study.

## *Four-Year Institutions*

We visited 15 four-year institutions and spoke to 62 stakeholders across the regions. These included institutions in the University of Texas, Texas A&M, and Texas Tech systems, as well as independent universities. Visits to four-year institutions typically lasted one to three hours, with institutional leaders and departmental experts participating in a single interview. In institutions without applied science degree programs, the departmental expert representatives were drawn from nursing and computer science programs. In regional colleges offering applied science degrees, we asked to meet with departmental experts on these programs.

## *Employers*

In addition to talking with education stakeholders, we sought to talk with employers regarding their perceptions of unmet workforce needs and their thoughts about the provision of baccalaureate degrees by community colleges. To identify potential employers, we worked with the regional workforce boards and business services representatives identified by the TWC. These workforce experts identified potential stakeholders and provided contact information for those willing to participate in the study. Overall, we conducted interviews with 13 nursing employers and 12 other employers across applied science industries.

## **Interviews with Key Stakeholders in Texas**

In addition to the deep-dive investigation of specific regions, we conducted 12 interviews with individuals identified as potential experts in the field or key stakeholders in the decisionmaking process. These key stakeholders included accreditation experts, representatives of nursing membership organizations, advocates from community colleges, and staff from oversight agencies. We conducted some of these interviews at the very beginning of the project to help us understand general issues and others after the deep dives.

## **Interviews with Stakeholders in Other States**

Although our primary focus was to collect and describe stakeholder perspectives in Texas, we sought to assess the experiences of other states to determine whether their stakeholders viewed community college baccalaureate expansion similarly. Given limited time and resources, we focused on the experiences of two states: Florida and Washington. Both were early adopters of community college baccalaureate programs, and both now host the largest number of community colleges offering baccalaureate programs. Although these states differ from Texas in important ways, their substantial experience in the area suggests that they may have lessons to offer about the potential effects of community college baccalaureate expansion. We spoke with several stakeholders in each state, including representatives from agencies that oversee and advise colleges and representatives from community colleges and universities. The protocols we used for these conversations addressed a range of issues, including the policy discussions around expansion, the processes involved in expanding community college baccalaureates, current perceptions of benefits and concerns associated with expansion, and the performance of the programs to date.

<sup>1</sup> In some colleges, interviews with institutional leadership and departmental experts were combined into a single interview. Knowing that we needed to speak with institutional leadership and departmental experts in selected areas, institutions were free to arrange the days according to the schedules of stakeholders and their interest in discussing various fields.

## Literature Review

We conducted a broad review of the existing research on community college baccalaureate programs. Our searches focused on such terms as “community college,” “two-year college,” “baccalaureate,” and “applied baccalaureate.” We also conducted targeted literature reviews in specific areas of interest. Throughout the study, we used literature reviews for a number of purposes, including:

- designing the decisionmaking framework and identifying the appropriate research questions;

- understanding national and state-level trends in community college baccalaureate expansion;
- gathering additional evidence around the issues raised in stakeholder interviews; and
- describing the fields of study on which we focused.

We integrated findings from literature reviews throughout this report to those from interviews, surveys, and quantitative analysis (discussed further later in this chapter).

## Webinar Feedback and Survey Data

On November 19, 2013, and March 25, 2014, RAND, HEPI, and the THECB conducted webinars to inform key stakeholders about our findings. The November webinar provided an outline of the study design and a description of the framework and research questions. The March webinar presented initial findings from the study. Webinar invitees included community college leaders, university leaders (from both public and private institutions), individuals who helped identify employers for the study, and several other stakeholders across Texas.

After the first webinar, we fielded short surveys to the leadership of all Texas public and private higher education institutions and other interested stakeholders. These surveys provided stakeholders with an opportunity to reflect on the webinar content and share opinions confidentially. We received 10 completed survey forms. Copies of the post-webinar survey instrument are provided in the appendix.

## Descriptive Analysis of Quantitative Data

In addition to literature research and stakeholder interviews, we used quantitative data throughout the study. We mapped the fields in the THECB survey to occupations in the data. In four of the five degree fields we examined, we focused on a single occupational group (Table 3.3). For computer and information technology, we focused on a group of occupations that are likely to employ computer and information technology graduates.

Once we defined our occupational groups, we relied on two data sources to describe demand. We used TWC data to identify the projected number of annual open positions for

individuals from a particular occupational group. The TWC's Tracer data tool provides a range of data on Texas, including total positions in 2010, projections of occupational growth through 2020, and number of projected annual job openings by occupation both across the state and within each WDA.<sup>2</sup>

While TWC data include total numbers of positions and openings, it is unclear what proportion of these positions requires a baccalaureate or graduate degree and what proportion do not. One way to estimate the educational requirements for new positions is to assume that they will reflect the current educational distribution of the workforce.

<sup>2</sup> For a description of TWC methods for developing projections and online access to the data tool, see Texas Workforce Commission, n.d.

To determine the current distribution of educational attainment for individuals in an occupation in Texas, we used data from the American Community Survey (ACS), an ongoing statistical survey administered by the U.S. Census Bureau. The ACS is sent to approximately 250,000 addresses

monthly (or three million per year). We used the 2012 Public Use Microdata Sample (U.S. Census Bureau, n.d.) to identify the distribution of educational attainment for individuals who report an occupation in the fields of focus shown in Table 3.3.

**Table 3.3.** Occupations Examined for Each Degree Field

Degree Field	Occupations
Nursing	Registered nurses
Computer and information technology	Computer and information systems managers, computer specialists, computer systems analysts, database administrators, network and computer systems administrators, computer support specialists, information security analysts, web developers, and all other computer occupations
Management in fire sciences	First-line supervisors of firefighting and prevention workers
Management of production/operations technicians	First-line supervisors of production and operating workers
Health information technology	Medical records and health information technicians

Finally, we used data on college enrollees and graduates to examine one source of workforce supply. For nursing, we relied on data from the Texas Department of State Health Services from 2007 to 2013, which include the number of prelicensure and postlicensure BSN graduates by program and year. In the applied sciences, we used THECB data to

determine the number of 2013 graduates in various fields and institutions.

To complement stakeholder perspectives, we also examined data on enrollment and persistence from the Integrated Postsecondary Education Data System and data on college tuition in Texas from The College Board and the THECB.

## Study Limitations

Using the study methods described above, we are able to depict some aspects of unmet workforce needs, provide an overview of stakeholder perspectives, and outline the potential policies and processes the state might consider. However, there are several limitations to the study.

Our analysis of unmet workforce needs is not sufficient to pinpoint the size of workforce shortages. While we look closely at several indicators of workforce supply and demand and attempt to prioritize fields, we cannot capture every element. For example, we look only at graduates as a source of supply, even though there are other potential sources of supply such as migrants to the region, workers re-entering the labor market, and individuals from other occupations

switching careers. RAND and HEPI are working on a separate study, also mandated by the Texas Legislature, to develop a workforce model that will improve the state's ability to identify the fields of study associated with occupations having the greatest unmet need.

In the present study, we use a basic process to identify unmet workforce needs, comparing occupational openings to graduates. Other measures, of course, are possible; the quantitative and qualitative methods we use should be triangulated with measures such as vacancy rates and changes in wages to provide a more complete view of unmet need in an occupation.

While we interviewed and had focus groups with a large number of stakeholders, we were still unable to capture the perspectives of many others. Our analysis focuses on just four regions of Texas, and there are likely to be some issues that were not raised in these regions but are important elsewhere. We included only a few private institutions and a limited number of employers in each field, and we included no for-profit institutions or technical colleges. We also were unable to interview students. In addition, we spoke with just a few stakeholders in Florida and Washington, so it is unlikely that we captured the full range of perspectives in those states.

Finally, while we do present some objective data to assess the arguments for and against community college baccalaureate expansion, we rely mainly on the opinions of stakeholders.

Objective evidence about the impact of these programs on student outcomes and higher education systems is limited. While there have been studies on community college baccalaureate programs in Texas and other states, these studies are largely descriptive and do not directly assess program impacts. For example, a recent Florida study (Schneider, 2014) compares salaries for baccalaureate recipients by type of institution but does not control for differences in student characteristics and prior earnings, and so it cannot be used to assess the quality or impact of community college baccalaureate programs. There is still a substantial amount of research needed on cost, quality, and other key issues, as we discuss later.



# 4 Identifying Unmet Workforce Needs

To determine whether there are unmet workforce needs that could be fulfilled by expanding baccalaureate degree programs at community colleges, several questions must be considered. These questions should typically be addressed at the regional level, although the state might want to prioritize and support degree programs that supply employees to occupations with substantial unmet workforce needs statewide.

The first question to ask is whether a baccalaureate degree will provide the level of education or training needed to meet the workforce need. The second question is whether an unmet workforce need will create a demand for baccalaureate-degreed individuals. Finally, we need to understand what degrees are currently provided by institutions to help meet regional needs. Below we describe the types of evidence that might address these three questions.

## The Type of Degree Needed

Before assessing the level of workforce supply and demand to determine whether additional baccalaureate programs are needed, we should establish whether there is a need for more workers with a baccalaureate degree in a given occupation. In particular, we should determine whether candidates with associate degrees, certificates, or high school diplomas can meet workforce needs, or, conversely, if such needs can be met only by graduate-level education. In either case, a new baccalaureate program may not be needed.

## *Knowledge, Skills, and Abilities Needed*

For an occupation to require a baccalaureate degree, it must need knowledge, skills, and abilities (KSAs) that go beyond the 60 hours of coursework in associate-level programs. KSAs do not always require additional formal education; employers often provide on-the-job training to employees to develop skills. To develop a formal baccalaureate program, the KSAs required in the workforce should be those that are best learned through a degree program as opposed to on-the-job training, and programs should include advanced coursework that satisfies the KSA needs for the occupation. State and higher education institutions may also wish to consider whether there is a need for the skills provided by general education coursework, including reading, writing, basic mathematics, and critical thinking. If these general education skills are less important, then workforce needs may be met sufficiently by providing advanced credentials or certifications in the field.

Several different sources of evidence may be useful in determining the KSAs needed for a particular workforce. The most valuable source is likely to be employers, who understand the KSAs that candidates need to perform well in particular positions. Community colleges offering applied degrees rely on advisory groups of employers and business representatives to align programs with workforce needs. Because these advisory groups are convened early in the planning stages of degree programs, they could be asked to describe the KSAs needed for particular occupations so that courses are designed appropriately.

Faculty, accreditors, and professional associations often have standards or sets of learning objectives that they recommend or require in particular programs. For example, the U.S. Fire Administration, an entity of the Department of Homeland Security's Federal Emergency Management Agency, provides a model baccalaureate program curriculum in the fire sciences. Core upper-division courses in the model curriculum include Applications of Fire Research, Community Risk Reduction for the Fire and Emergency Services, Fire and Emergency Services Administration, Fire Prevention Organization and Management, Personnel Management for the Fire and Emergency Services, and Political and Legal Foundations of Fire Protection. This suggests that the KSAs for fire sciences education beyond the associate level are largely related to administration and management. The *Essentials of Baccalaureate Education for Professional Nursing Practice*, a publication of the American Association of Colleges of Nursing, describes the KSAs needed by nurses at the advanced levels and the related components of a high-quality BSN program.

National sources of data also provide information on the characteristics of KSAs in occupations. For example, the Occupational Information Network (O\*NET) is a comprehensive database of worker attributes and job characteristics provided by the Department of Labor in collaboration with the Research Triangle Institute.<sup>3</sup> It collects data through national surveys of employers and individuals in occupations. The data are regularly updated, and the methods are designed to provide valid and reliable descriptions of occupations. O\*NET provides detailed information about the most important areas of the KSAs required to participate in the job.

**The most valuable source for determining the KSAs needed for a particular workforce is employers, who understand what candidates need to perform well in particular positions.**

### *Entry-Level Requirements*

Beyond the KSAs needed to successfully perform in an occupation, there may be entry-level educational requirements for candidates to have a baccalaureate or graduate education. In some occupations, there is substantial variation in the educational requirements specified by employers. Variation in entry-level standards may result from employer preferences, regional variation in workforce needs, or other employer- or region-specific circumstances. For other occupations, most employers require a clear and consistent educational standard.

One way to assess educational requirements for a particular occupation is to ask local employers directly. Another is to search local job listings for the most common degree requirements within an occupation. National and state-level data sources can also shed light on educational requirements of employers. For example, the Bureau of Labor Statistics (BLS) Occupational Outlook provides the entry-level education requirements for all occupations. The bureau bases these entry-level requirements on a mix of quantitative and qualitative evidence about the "typical level" required for entry, drawing information from employers, individuals in the occupation, educators, and professional associations or unions (BLS, 2013). The degree levels of individuals in an occupation may also be used to approximate the degree requirements of employers.

Although entry-level degree requirements may provide a minimal standard, they may not reflect the actual hiring decisions of employers, who may demand higher levels of education than evident in job listings and similar sources. Employers may choose to set lower entry-level standards to ensure that they interview a wide pool of potentially qualified candidates but ultimately hire candidates with higher levels of education. ACS data may provide a more accurate picture of the degrees held by those in an occupation and better reflect actual employer requirements at both the regional and statewide levels.

<sup>3</sup> For more information, visit the O\*NET homepage ([www.onetonline.org](http://www.onetonline.org)).

For some occupations, there is little variation in educational requirements set by professional associations or states for certification. For example, the American Physical Therapy Association specifies that education for physical therapists should be at the graduate level and that for physical therapy assistants should be at the associate level. When associations decide to set higher entry-level education requirements, degree programs must evolve as well. For example, the American Association for Respiratory Care has in recent years advocated requiring a baccalaureate degree for entry into respiratory therapy, and in 2012 the association called for all associate-level programs to transition to baccalaureate-level or graduate-level education. As we describe later, a similar phenomenon is occurring in nursing. Regardless of whether higher degree requirements are grounded in actual needs, such changes have a substantial influence on the content of degree programs.

**Capturing current workforce needs is important, but institutions and the state must also consider future needs now, because developing degree sustainable programs takes time, resources, and long-term planning.**

## **The Level of Workforce Demand**

If some or all members of an occupation require a baccalaureate degree, the next question concerns the level of demand for baccalaureate-degreed individuals. Two major processes drive the level of demand. First, employers must fill new openings each year. The number of new openings within an occupation includes positions that become available because of attrition and those that are newly created as demand for an occupation grows. Second, some occupations experience a demand for higher levels of education among existing workers. In these occupations, existing workers who need to upgrade their education will contribute additional demand, even while remaining in the same occupation.

In this project we describe workforce educational demand using three sources: occupational projections from the TWC, data on workers' educational attainment in the ACS, and data on existing postsecondary programs. Other sources on workforce

demand and needs may include employer and population surveys, economic modeling, analysis of job postings, vacancy rates, unemployment rates, and wage analysis.

The TWC provides detailed occupational projections for each WDA. These statistics can help predict the number of job openings in a given year for a given occupation and region. Not all job openings are likely to be filled by new graduates, so the number of job openings does not directly translate into the number of degrees needed. Individuals who move into a state or among regions, who change jobs, or who exit periods of unemployment are other potential sources of labor. Regions with large numbers of openings are likely to be those needing the highest numbers of degrees, but the relationship is not exact. Institutions and the state must therefore be cautious about expanding programs to fill every available position.

As noted earlier, the level of degree required for an occupation may vary across employers. One option to estimate the number of openings requiring a bachelor's degree is to use ACS data on the current distribution of degree-holders within an occupation. For example, if 73 percent of computer programmers hold bachelor's degrees, we might assume that 73 percent of open positions require the baccalaureate. Educational standards are changing, however. Younger individuals likely have higher levels of education than their older peers in an occupation. More broadly, most employers say they will demand more candidates with bachelor's degrees in coming years (Society for Human Resource Management, 2012), particularly in health, manufacturing, construction, mining, oil, and gas (Achieve, 2012). While we focus on current educational distributions to estimate demand for baccalaureate degrees, one option to address increasing standards is to review trends in the educational distribution over time. Another is to analyze the more recently employed or, if time of employment is not available, the educational distribution of younger workers.

Capturing current workforce needs is important, but institutions and the state must also consider future needs now, because developing sustainable degree programs takes time, resources, and long-term planning. When associations mandate changes in educational standards, such as when the Institute of Medicine advocated increasing the proportion of RNs with baccalaureate degrees to 80 percent by 2020, institutions and states can identify clear targets and timelines for planning.<sup>4</sup> TWC data provide occupational

<sup>4</sup> Some stakeholders in Texas and elsewhere were skeptical about the Institute of Medicine's 80 percent target (and about targets for other health fields). Some speculated that the push for BSNs may diminish in the future.



projections through 2020 by WDA, which can be used to calculate growth in occupations by region. Future growth in an occupation is an important aspect to consider when determining whether unmet workforce needs can best be met through new baccalaureate programs. If an occupation or industry experiences a short-term expansion bubble, it may be more effective to meet workforce needs through temporary expansion of existing programs.

## Number of Degrees Currently Being Provided

Estimating demand for future degrees also requires considering unmet workforce needs, which indicate that existing higher education programs and pathways are not serving all needs of state employers and students. Analysis that focuses on demand without examining current and future supply could lead to unnecessary duplication of programs. As we discuss later, all the stakeholders we interviewed wish to avoid unnecessary duplication. They view excessive competition for students and other resources as both undesirable for the state and—if the emphasis is on meeting workforce needs—avoidable.

For some professional occupations, such as nursing, the degree-holders-to-jobs match is straightforward: To work as a nurse, an individual must hold a nursing degree, and most individuals who graduate from nursing programs are likely to go into nursing or one of a few nursing-related occupations. In other occupations, such as those involving computer and

information technology, the pathways are very different. Many individuals in these occupations enter the workforce without any postsecondary education. Others have certificates, associate degrees, or baccalaureate degrees. The field of study for degrees feeding into computer and information technology-related occupations varies widely. Table 4.1 shows the most common baccalaureate degree fields among computer systems analysts in Texas. Clearly, many types of degrees feed into this occupation. It is challenging, therefore, to identify whether existing programs are meeting the workforce needs, because existing programs may represent a wide range of fields.

The federal government provides a crosswalk tool for the Department of Labor’s Standard Occupational Codes and the Department of Education’s Classification of Instructional Program codes. This tool, however, is extremely limited, and accounts only for degrees and occupations that are clearly and closely linked. Only two of the instructional programs listed in Table 4.1 are linked with the computer systems analyst occupation, for example. Limiting the pool of supply to degrees identified in the crosswalk is likely to underestimate the true number of individuals equipped to meet occupational workforce needs. Degrees also may be linked to multiple occupations, so it is unclear how many graduates in a field might choose one occupation over others to which the degree is linked. Other employers identified skills related to general education, such as critical thinking, as the most valuable qualities of their baccalaureate-trained employees. For these employers, a broader set of degree fields may serve workforce needs.

**Table 4.1.** *The Most Common Degree Fields Among Computer Systems Analysts with a Baccalaureate Degree in Texas, 2010–11*

Degree Field	Percentage of Degrees
Computer Science	12.1
Business Management and Administration	7.4
Computer and Information Systems—General	6.3
Finance	5.7
Electrical Engineering	5.5
General Business	5.1
Mathematics	4.4
Computer Engineering	4.0
General Engineering	3.8
Management Information Systems and Statistics	3.7
Accounting	3.2
Biology	2.8
Mechanical Engineering	2.7
Information Sciences	2.7
Economics	2.3
Psychology	2.0

Alternatively, if employers prefer to have more narrowly trained candidates but must recruit from a more diverse pool because of shortages in the most closely aligned programs, then it may not be appropriate to consider supply from a broad range of fields. In many interviews, employers expressed a desire for highly focused programs with KSAs tailored to workforce needs. These workforce needs may call for programs that are more specialized or applied.

The most basic way to assess supply in a specific region and degree field is to account for the number of graduates from programs similar to that being proposed. THECB degree data and data on nursing degree production from the Texas Department of State Health Services can help in assessing the total number of graduates from related programs within a region. If candidates from a range of different fields can meet

a workforce need, then a broader set of programs may need to be considered.

Beyond degree production and number of graduates, policymakers should consider still other variables shaping workforce and degree need in assessing the need for particular baccalaureate programs. For example, they may examine the employment rates of graduates and the ability of programs to expand. If existing programs are graduating students with low employment rates, or if these programs are below capacity or their desired level of enrollment, then new or additional programs may not be needed. At the same time, if existing programs are not meeting student and workforce needs effectively, new programs may be better able to meet workforce development needs.

## Analysis of Unmet Needs in Our Five Occupations of Focus

In this section, we assess unmet workforce needs in our five occupations of focus, beginning with nursing. We summarize the findings in Table 4.2, and describe the findings in greater detail in sections devoted to each occupation.

### The Need for Baccalaureate Degrees in Nursing

Texas, like many states across the nation, is facing serious nursing shortages. To become an RN in Texas, an individual must graduate from a nursing program that is regionally accredited and approved by the Board of Nursing. The individual also must receive a satisfactory score on either the State Board Test Pool Examination or the National Council Licensure Examination for Registered Nurses. Nursing students may become RNs by graduating from an Associate Degree of Nursing (ADN) program or a BSN program. The BSN level “programs encompass all of the course work taught in associate degree and diploma programs plus a more in-depth treatment of the physical and social sciences, nursing research, public and community health, nursing management, and the humanities” (American Association of Colleges of Nursing, 2014b, p. 1). Since the introduction of the ADN in 1952 as a means to address nursing shortages, it has become the minimum standard for entry into the occupation

and was for many decades the degree most commonly held by RNs (Haase, 1990). Over the past decade, RNs with a baccalaureate degree or higher have represented about half of all RNs in Texas.

Education levels in nursing received greater attention when the Institute of Medicine (2010) called for increasing the number of baccalaureate-prepared nurses in the workforce to 80 percent by 2020. This call was largely based on studies showing that BSN nurses help reduce mortality among patients. The Institute of Medicine report also suggested that major changes in healthcare will require equally large changes in nursing education. In particular, the “competencies needed to practice have expanded, especially in the domains of community and public health, geriatrics, leadership, health policy, system improvement and change, research and evidence-based practice, and teamwork and collaboration” (Institute of Medicine, 2010, p. 6). Care within hospitals involves more complex and expanded responsibilities, including working with frailer patients and with sophisticated life-saving technology (Institute of Medicine, 2010).

Table 4.2. Summary of Findings on Unmet Workforce Needs for the Five Occupations of Focus

	Need for Baccalaureate	Level of Demand	Existing Supply	Special Issues
<b>Nursing</b>	<ul style="list-style-type: none"> <li>The Institute of Medicine has called for 80% of nurses to have BSNs, based on safety studies and growing role of nurses in the health workforce.</li> </ul>	<ul style="list-style-type: none"> <li>Currently only 51% of RNs in Texas have BSNs.</li> <li>The push to meet the 80% target is particularly strong in urban areas.</li> </ul>	<ul style="list-style-type: none"> <li>Both online and face-to-face RN-to-BSN and generic BSN programs have expanded rapidly.</li> <li>Greatest supply is in urban areas.</li> </ul>	<ul style="list-style-type: none"> <li>Limitations on faculty and clinical spaces may present additional challenges.</li> <li>Quality is viewed as particularly important.</li> </ul>
	<p><b>Conclusion:</b> There is strong demand for BSNs, especially in urban areas, but supply also has been rapidly increasing. There may be some small need for additional face-to-face programs.</p>			
<b>Computer and Information Technology</b>	<ul style="list-style-type: none"> <li>Associate degrees and certificates are sufficient for many, but a significant number of applied IT jobs are at the baccalaureate level.</li> </ul>	<ul style="list-style-type: none"> <li>There is strong demand in related industries, and many jobs exist.</li> <li>Baccalaureate-level positions are highly concentrated in urban areas.</li> </ul>	<ul style="list-style-type: none"> <li>Some IT programs are in place at universities and community colleges, but they may not be enough to meet strong demand.</li> </ul>	<ul style="list-style-type: none"> <li>A limited pipeline of students going into these fields is a common concern across programs.</li> </ul>
	<p><b>Conclusion:</b> There is a strong demand for baccalaureate-level individuals, though supply is limited by relatively few individuals choosing the field. If additional programs can help bring in new students rather than competing for the existing limited pool, new programs may provide a benefit.</p>			
<b>Fire Sciences Management</b>	<ul style="list-style-type: none"> <li>Management and leadership education is required to move to supervisory levels.</li> <li>Employers argue that industry-specific training is useful.</li> </ul>	<ul style="list-style-type: none"> <li>Statewide demand is relatively small.</li> <li>Demand is distributed across the state.</li> </ul>	<ul style="list-style-type: none"> <li>The three current community colleges offer management degrees that are not specific to fire sciences.</li> <li>The BAAS programs at universities may or may not meet needs.</li> </ul>	<ul style="list-style-type: none"> <li>Tuition waivers without state reimbursement suggest that provision may be costly to institutions.</li> </ul>
	<p><b>Conclusion:</b> There is a small demand spread across the state that could be met through more general BAAS programs but may also benefit from one or two industry-specific degree programs.</p>			
<b>Management of Production/Operations Technicians</b>	<ul style="list-style-type: none"> <li>Employers desire technicians with management and leadership skills for progression to supervisory roles.</li> </ul>	<ul style="list-style-type: none"> <li>Statewide demand is relatively small.</li> <li>Demand is largely concentrated in the Gulf Coast and regions with major production industries.</li> </ul>	<ul style="list-style-type: none"> <li>The three current community colleges offer management degrees.</li> <li>The BAAS programs at universities may or may not meet needs.</li> </ul>	<ul style="list-style-type: none"> <li>Some question whether these programs should be industry-specific or should provide management education for a variety of industries.</li> </ul>
	<p><b>Conclusion:</b> There is a small demand that is concentrated in the Gulf Coast region that could be met through more general BAAS programs but may also benefit from industry-specific degree programs.</p>			
<b>Health Information Technology</b>	<ul style="list-style-type: none"> <li>No HIT-specific baccalaureate is needed for coding or systems design/management, but there is a possible need for health information management degrees.</li> </ul>	<ul style="list-style-type: none"> <li>Statewide demand is relatively small.</li> <li>Demand is distributed across the state.</li> </ul>	<ul style="list-style-type: none"> <li>There are two programs currently being provided by universities.</li> <li>BAAS programs at universities may or may not meet needs.</li> </ul>	<ul style="list-style-type: none"> <li>The field is rapidly changing, so it is important to watch it closely.</li> </ul>
	<p><b>Conclusion:</b> There is a small demand spread across the state that is likely being met through two industry-specific programs and through more general BAAS programs.</p>			

Another source of pressure to increase the percentage of RNs with a baccalaureate degree is the Magnet Recognition Program of the American Nurses Credentialing Center (ANCC). Hospitals with magnet status are recognized as “health care organizations for quality patient care, nursing excellence and innovations in professional nursing practice,” and this is seen “as the ultimate credential for high-quality nursing” (ANCC, n.d., para. 1). For a hospital to qualify for magnet status, 80 percent of its nursing staff must have BSNs or the hospital must have a plan to meet the 80 percent threshold by 2020. Although only six percent of U.S. hospitals have achieved magnet status, there are 31 magnet hospitals in Texas, with most located in the Gulf Coast and DFW (ANCC, n.d.).

When we spoke to healthcare employers in our four regions of focus, at least half expressed a preference for BSNs. These preferences were particularly common among employers in the Gulf Coast and DFW. Employers’ reasons for preferring BSNs include better safety outcomes, higher levels of critical thinking skills, and the ability to deal with a range of cases and patients beyond those for which they were directly trained. Institutional stakeholders argued that BSN education is distinct from ADN education because, rather than teaching students to focus on completing tasks and following procedures, it equips students to draw from a wide range of evidence and a diverse set of resources to determine the best course of care for a patient and to deliver it in the most effective way.

Many stakeholders, however, disagree that all nurses should be trained at the baccalaureate level. All the employers we interviewed were aware of research finding greater levels of safety associated with BSNs, but many still preferred ADNs. Specifically, some employers argued that associate-degreed nurses are more ready to “hit the ground running” and are more proficient in direct patient care. The fact that these students can enter the workforce more quickly was identified as a particular advantage, with several employers noting that experience on the job is significantly more important than the level of the degree. Representatives from some community colleges expressed concern that the movement toward BSNs represents “degree creep” and that the emphasis on BSN programs might detract from the success that ADN programs have achieved across multiple states in meeting workforce needs. In particular, ADNs’ ability to enter the workforce

quickly was touted as a great advantage for individuals who are not able to stay out of the workforce while completing a full BSN program.

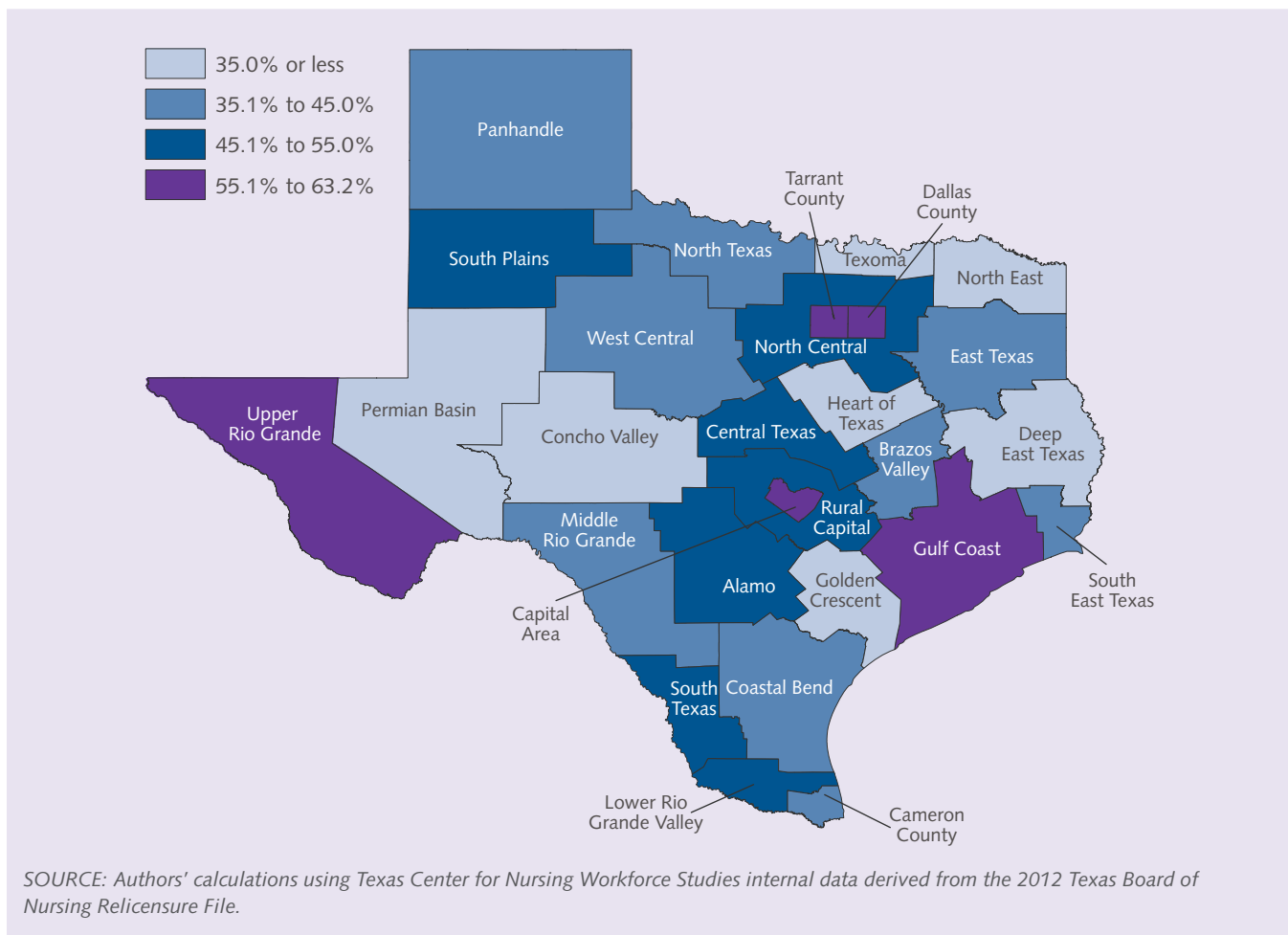
### *The Demand for Baccalaureate-Degreed Nurses*

The demand for RNs in Texas is strong. As of early 2014, there were approximately 209,000 positions for RNs in the state, and the demand is expected to grow by 33 percent between 2010 and 2020. According to 2012 data from the Board of Nursing Relicensure File, 51 percent of RNs in Texas have a BSN degree or higher. To meet this growth in demand and to maintain current education levels in the workforce, nearly 10,000 positions for RNs must be filled annually. The growth in positions for RNs is spread unevenly across the state; it is greatest in the Gulf Coast (38 percent over 10 years) and substantially lower in East Texas (24 to 25 percent). Most other regions of Texas are projected to have about 30 percent growth in nursing positions between 2010 and 2020.

To maintain the current rate of BSN-holding nurses at 51 percent, 5,000 of the new annual positions must be filled with BSNs. To advance toward the 80 percent target for BSN-level nurses by 2020, the number of BSN nurses entering the workforce must be much greater. Figure 4.1 shows the percentage of RNs who held BSNs in 2012, by WDA. If all regions are to meet the 80 percent target, then the rural regions must have a sharp increase in their proportion of BSNs.

It is not clear that all regions are pursuing the Institute of Medicine target with the same intensity. Our conversations with stakeholders suggest that although employers in South Texas and West Texas see increased baccalaureates among nurses as an important long-term goal, they do not think it is realistic for facilities in their regions to meet the 80 percent threshold by 2020. Many of these employers emphasized the need to fill positions with any good nurses, regardless of their level of education. In the urban regions, employers were much more committed to the 80 percent target and have established facility-wide hiring policies restricting the entry of ADNs. ADN programs in these regions are experiencing challenges with securing clinical placements. Urban stakeholders claim that ADN graduates will soon be largely limited to working outside traditional hospital settings because urban hospitals are increasingly limiting clinical rotations to students who are enrolled in BSN programs.

**Figure 4.1.** Percentage of RNs Who Held BSNs in 2012, by WDA



### The Supply of Baccalaureate-Degreed Nurses

There is a clear demand for RNs in Texas, and this demand is largely shifting toward RNs with baccalaureate degrees. Whether we can assume the level of demand will meet or exceed the 80 percent threshold is in question, but we can be certain there will be a strong demand for BSNs over the next decade, with the number of graduates needing to increase dramatically to meet workforce needs. The need for BSNs will far outpace what could be produced by enrolling only new nursing students in BSN programs. Part of this increase in graduates will need to be met by providing existing associate-degreed nurses with the additional 12–18 months of coursework needed for the BSN. These transformation needs are served by RN-to-BSN programs, which top off the technical skills learned at the associate level with skills in leadership, research, and community health.

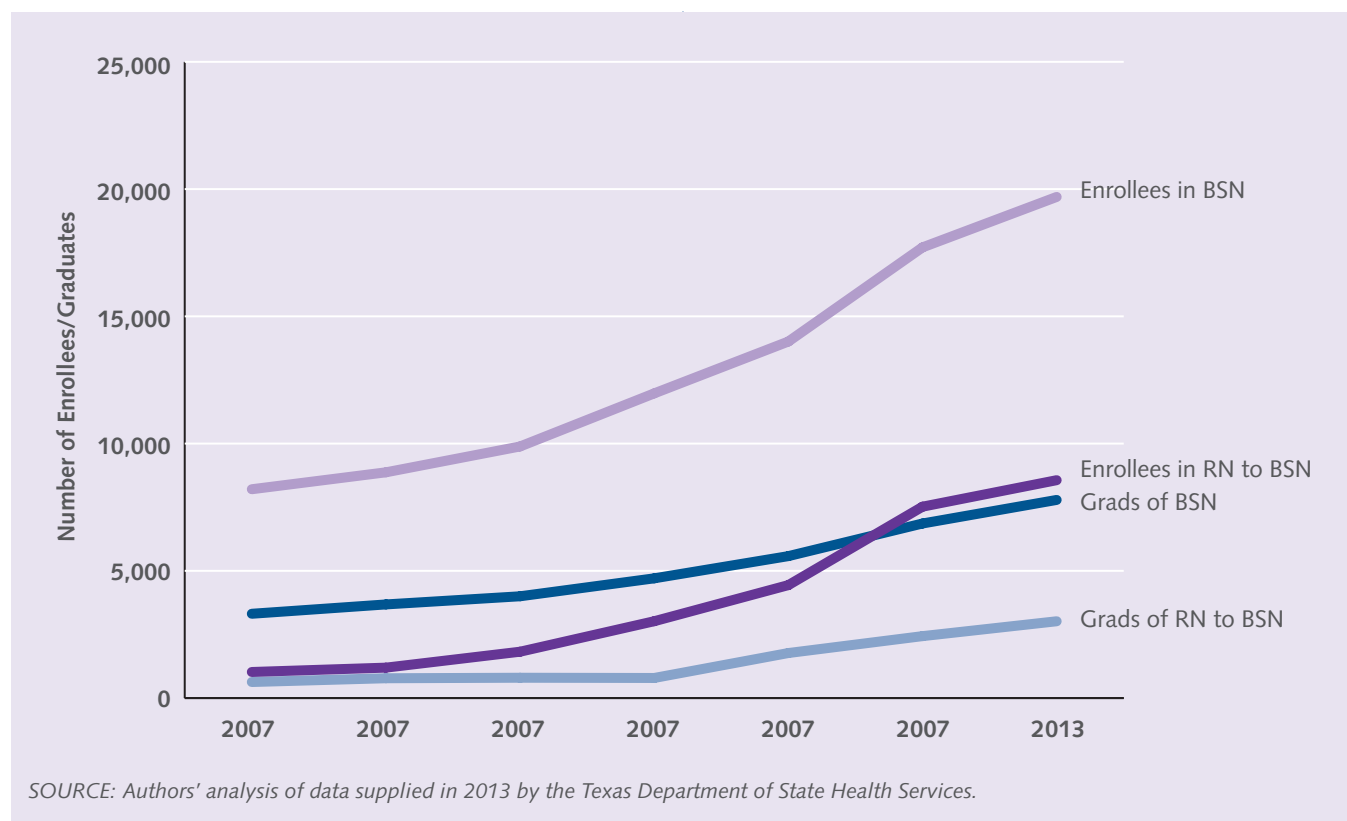
As Figure 4.2 shows, the numbers of both generic BSN graduates and RN-to-BSN graduates have expanded rapidly since 2007. There are more than 7,000 graduates annually

from BSN programs in Texas, indicating that the educational distribution should be shifting up from the 51 percent toward the 80 percent target.

Many RN-to-BSN programs involve close partnerships between community colleges and universities to ensure that students are able to transfer seamlessly. The health science centers run by the Texas university systems to provide advanced education in health fields are particularly eager to engage with local community colleges in their regions because these programs are not able to enroll students in the first two years of undergraduate education and must ensure a sufficient number of incoming students for their programs.

RN-to-BSN programs are offered both online and face-to-face. There has been particularly significant expansion of online RN-to-BSN programs. This expansion has been valuable for many nurses who must remain employed and are unable to enroll in face-to-face programs. The rapid growth in these online programs was facilitated by the absence of state oversight of RN-to-BSN

Figure 4.2. Growth in Enrollment and Graduation among BSN Programs in Texas, 2007–13



programs are not overseen by the Board of Nursing, and because national accreditation is not required for nursing programs by the state of Texas, RN-to-BSN programs have not faced the faculty recruiting constraints that ADN and generic BSN programs have. As of early 2014, the largest online RN-to-BSN provider was UT–Arlington, which

graduated more than 1,750 students in 2013 (see Table 4.3).<sup>5</sup> According to both community college and university stakeholders, UT–Arlington and other online programs have essentially saturated the Texas market for online RN-to-BSN programs. These programs ensure that workforce needs can be met across all regions of the state.

Table 4.3. BSN Enrollees and Graduates in 2013, by Institution

	Enrollees			Graduates		
	Prelicensure Total	Postlicensure Total (RN-to-BSN)	Enrollment Total	Prelicensure Total	Postlicensure Total (RN-to-BSN)	Graduate Total
Abilene Christian University	52	0	52	0	0	0
Angelo State University	106	165	271	16	92	108
Baylor University	360	0	360	155	0	155
Chamberlain College of Nursing	263	0	263	23	0	23
Concordia University Texas	93	0	93	56	0	56
East Texas Baptist University	49	0	49	12	0	12
Gayle Greve Hunt School of Nursing	107	0	107	69	0	69
Houston Baptist University	198	1	199	39	1	40

<sup>5</sup> It is important to note that a substantial number of enrollees/graduates in online RN-to-BSN programs may be out-of-state students. Data from UT–Arlington indicates that in 2012, 20 percent of graduates were out-of-state students.

**Table 4.3.** BSN Enrollees and Graduates in 2013, by Institution (continued)

	Enrollees			Graduates		
	Prelicensure Total	Postlicensure Total (RN-to-BSN)	Enrollment Total	Prelicensure Total	Postlicensure Total (RN-to-BSN)	Graduate Total
Lamar University	278	259	537	81	17	98
Midwestern State University	415	20	435	150	11	161
Patty Hanks Shelton	183	0	183	59	1	60
Prairie View A&M University	437	31	468	158	8	166
Sam Houston State University	100	0	100	32	0	32
Schreiner University	46	0	46	23	0	23
Southwestern Adventist University	94	2	96	50	6	56
Stephen F. Austin State University	259	36	295	118	16	134
Tarleton State University	251	24	275	98	0	98
Texas A&M Health Science Center	142	42	184	71	18	89
Texas A&M International University	133	14	147	65	7	72
Texas A&M University–Commerce*	23	0	23	0	0	0
Texas A&M University–Corpus Christi	428	15	443	180	8	188
Texas Christian University	432	0	432	180	0	180
Texas State University	189	0	189	80	0	80
Texas Tech University	566	365	931	289	480	769
Texas Woman's University	809	127	936	361	75	436
University of Texas at Tyler	514	29	543	283	31	314
University of Houston–Victoria	44	105	149	37	64	101
University of Mary Hardin-Baylor	494	1	495	137	1	138
University of St. Thomas*	63	0	63	0	0	0
University of Texas at Arlington	846	6,474	7,320	382	1,755	2,137
University of Texas at Austin	244	50	294	122	21	143
University of Texas at Brownsville*	0	86	86	0	0	0
University of Texas at El Paso	447	110	557	179	111	290
University of Texas Medical Branch	419	85	504	282	83	365
University of Texas–Pan American	237	10	247	134	10	144
University of Texas–Permian Basin*	19	0	19	0	0	0
University of the Incarnate Word	192	36	228	56	24	80
UT Health Science Center at Houston	524	96	620	263	66	329
UT Health Science Center at San Antonio	561	0	561	331	0	331
Wayland Baptist University	140	4	144	113	2	115
West Coast University*	209	0	209	0	0	0
West Texas A&M University	122	99	221	69	33	102
Western Governors University	42	276	318	15	77	92
<b>Total</b>	<b>11,130</b>	<b>8,562</b>	<b>19,692</b>	<b>4,768</b>	<b>3,018</b>	<b>7,786</b>

\* Denotes schools that have not yet graduated students.

SOURCE: Data supplied in 2013 by the Texas Department of State Health Services.

Generic BSN programs will continue to help meet workforce needs for baccalaureate-degreed nurses. Due to tight faculty restrictions and the other limited resources (e.g., clinical spaces and simulation facilities), these programs have tended to remain relatively small. In 2013 across Texas, there were 4,768 prelicensure graduates from generic BSN programs at 42 different institutions.

## The Need for Baccalaureate Degrees in the Applied Sciences

There are several reasons for offering applied baccalaureate degrees in Texas. The first is the need to allow students who began their education in applied (either technical or nontechnical) fields to obtain a comprehensive general studies education with advanced coursework in specific areas. The second is to meet specific workforce needs in a particular applied area. Our research suggests that the state believes these programs are providing some value. Most stakeholders we interviewed agreed that applied science degrees may be needed in some fields.

However, some stakeholders, primarily department-level staff at universities, questioned the need for applied science baccalaureates. These stakeholders believe that a baccalaureate should provide a well-rounded education in the liberal arts and sciences as a foundation to professional training in more technical fields. In their opinion, degree programs that are primarily applied and that focus only on technical fields are unlikely to provide the traditional liberal arts education that defines a baccalaureate degree and, therefore, should not be called baccalaureates.

Nearly 2,000 students have graduated from 40 applied science programs at 23 universities and three community colleges. Existing baccalaureate programs in the applied sciences may suffice to meet workforce needs in some areas. Graduates from applied baccalaureate programs are also not the only source of labor for meeting workforce needs. As noted earlier, individuals who move into a state or region, who change jobs, or who exit periods of unemployment are other potential sources of labor. Graduates from nonapplied baccalaureate programs may also compete with graduates from applied baccalaureate programs for positions.

It is a challenge to develop a full economic model that can capture all these different components of workforce supply and demand and identify workforce shortage precisely. RAND and HEPI's ongoing study to develop a workforce model is aimed at expanding the tools for this type of analysis. In the meantime, we suggest using a range of quantitative

indicators and direct conversations with employers to determine whether needs are being met. Comparing numbers of graduates with annual openings can provide some information to help regions prioritize occupations and degree fields on which to concentrate.

For some of these degree programs—particularly those in management—representatives from community colleges were typically interested in developing programs that served several similar occupations. They suggested, for example, that community colleges might offer a program jointly to firefighters and public safety officers because there is sufficient crossover in workforce needs and in the KSAs required to successfully perform in supervisory positions in those occupations. In addition, although we focused primarily on the preparation of students for oil and gas industries, programs offered by Brazosport, Midland, and other colleges already have been designed to serve students in other industries, such as manufacturing and automotive repair, where supervisors oversee technicians.

## Computer and Information Technology

### *The Need for Baccalaureate-Degreed Individuals*

The number of jobs in the computer and information technology sector has increased rapidly in recent decades. Degrees in computer and information technology feed into a wide range of occupations, and the entry-level education requirements of these different occupations vary. The Department of Labor specifies that most jobs in such occupations as network and computer systems administration, network security analysis, and computer systems analysis require a bachelor's degree, but some do not. In other occupations, such as computer user support and web development, an associate degree is the entry-level education requirement. According to ACS data (U.S. Census Bureau, n.d.) 60 percent of those employed in Texas in occupations most commonly associated with information technology degrees hold a baccalaureate degree.

Associate degrees in computer and information technology typically provide a solid foundation in applied computing knowledge and skills through problem analysis, program design, and program testing. Many colleges offer tracks within a single degree or separate degree options in such areas as network support, programming, security, and systems analysis. Yet many community college interviewees argued





that a 60-hour associate-degree program did not provide students with enough time to learn the technical skills needed to advance in the computer and information technology workforce. They claimed that a baccalaureate degree in computer and information technology gives students the opportunity to develop more advanced technical skills in their areas of focus while also attaining a general education.

Stakeholders' opinions about the need for a baccalaureate degree in computer and information technology were mixed. Some employers, community colleges, and universities felt that, although there may be KSAs that require education beyond the associate degree, students can develop these by "stacking" specific certificates representing advanced skills in areas (e.g., Cisco networking and programming languages) required by an employer. Most employers we interviewed reported that a baccalaureate degree is "nice to have" but not required. A large employer in DFW with a computer and information technology workforce of more than 300

reported having baccalaureate-level entry requirements for some positions but not others. Every employer we interviewed supported both creating additional programs in computer and information technology and housing these programs at community colleges.<sup>6</sup>

### *The Level of Demand for Baccalaureate-Degreed Individuals*

The TWC (n.d.) has projected that jobs in computer and information technology-related occupations in Texas will number more than 486,000 within the next decade. The rapid growth of this industry in recent decades, combined with a limited pipeline of applicants to related degree programs, has led to substantial workforce shortages (Microsoft, 2012). The Texas Engineering Task Force identified a need for nearly 9,000 new engineers and computer specialists annually in the next decade—a number far above that of current graduates per year (LaCoste-Caputo and Adler, 2013). Our interviews

<sup>6</sup> It is important to note that our sample of employers was small. Given wide variation among employers of computer and information technology graduates, it is unlikely that these interviews provided a full view of the needs and perspectives of employers in Texas.

with community colleges and universities indicate the graduates of these programs receive immediate employment and high wages, and the demand for such workers is higher than programs can meet. Statewide, 18,480 positions are projected to be available annually between 2010 and 2020 in occupations intended for candidates with education or training in information technology (TWC, n.d.). Nearly 60 percent of individuals in these occupations hold baccalaureate degrees, so it may be reasonable to expect 11,000 positions will be available each year to individuals with baccalaureate degrees.

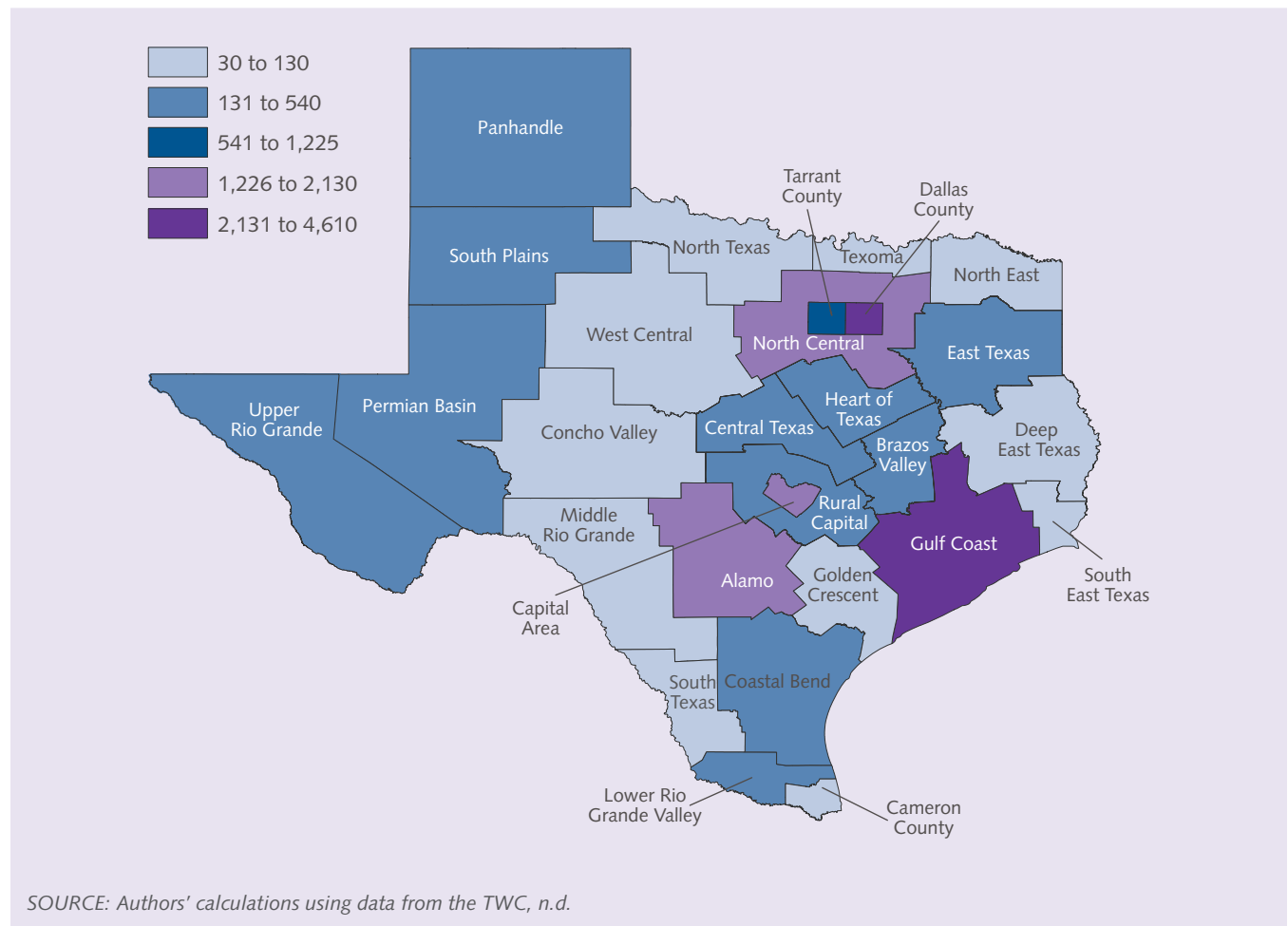
Figure 4.3 shows projected annual openings in computer and information technology between 2010 and 2020. There appears to be substantial demand for workers to fill computer and information technology-related jobs, particularly in metropolitan regions. More than 6,550 total positions are projected to be available in DFW annually. If we assume that hiring patterns mimic the educational distribution of the existing workforce, then we could expect nearly 3,900 open positions for baccalaureate-degreed candidates in DFW.

The areas surrounding Houston, Austin, and San Antonio account for another 9,000 openings annually, of which we might expect at least 5,300 to be for positions that require a bachelor's degree. This suggests that more than 80 percent of all baccalaureate-level positions in computer and information technology occupations are concentrated in these four areas, assuming that entry-level requirements are similar across all regions in the state. Qualitative data from our interviews suggest that educational requirements are likely to be somewhat higher among computer and information technology employers in urban regions. Although rural employers agreed that applicants with bachelor's degrees are preferable, they noted that these graduates typically move to big cities and are often considered beyond the reach of rural employers.

### The Supply of Baccalaureate-Degreed Individuals

While Table 4.1 indicated that individuals in computer and information technology occupations often come from a wide range of educational backgrounds, we focus specifically

**Figure 4.3.** Projected Annual Openings in Computer and Information Technology Between 2010 and 2020, by WDA



on programs in information technology and computer and information technology. Most universities also offer computer science programs, which stakeholders described as highly theoretical and typically intended to prepare students for careers in software design and high-level programming. Information technology degrees are more focused on preparing students for positions that involve working directly with systems and providing design and support services for employers across a wide range of industries. Stakeholders at both community colleges and universities asserted that computer science and information technology graduates typically fall into distinct workforces, although there is likely some crossover in certain occupations.

Texas offers a number of baccalaureate programs in information technology. In 2013, these included 22 traditional Bachelor of Science programs at universities that graduated a total of 502 students; one BAAS program at Tarleton State that graduated 20 students; and a BAT program at UT–Brownsville that graduated 26 students and another at South Texas College that graduated 34. These programs focus on providing students with advanced technical skills in their particular specialty. Stakeholders argued that, unlike management degrees, baccalaureate programs in information technology and programs intended to build advanced technical skills likely would require a face-to-face component. Conveniently, the supply of baccalaureate degree programs in computer and information technology is concentrated in the metropolitan areas where demand is highest. In rural areas, existing two-year programs may suffice to meet workforce needs, given that employers there typically require lower levels of education.

One important issue raised repeatedly by institutional stakeholders when discussing the supply of baccalaureate-level graduates from computer and information technology programs is the limited number of students choosing to enroll in such programs. National data show that five percent of all undergraduates in 2003–04 were enrolled in computer and information science fields (Institute of Education Sciences, 2009). Several interviewees noted that their institutions are strongly promoting their computer and information technology programs but are unable to meet enrollment targets. This suggests that there is additional capacity in existing programs to meet workforce needs. To ensure that new programs do not generate counterproductive competition, it will be necessary to further investigate the extent of student demand. At the same time, if new programs at community colleges encourage associate-level students who would otherwise not continue their education to consider a baccalaureate degree, then these programs may increase overall student interest in the field.

## Management in Fire Sciences

### *The Need for Baccalaureate-Degreed Individuals*

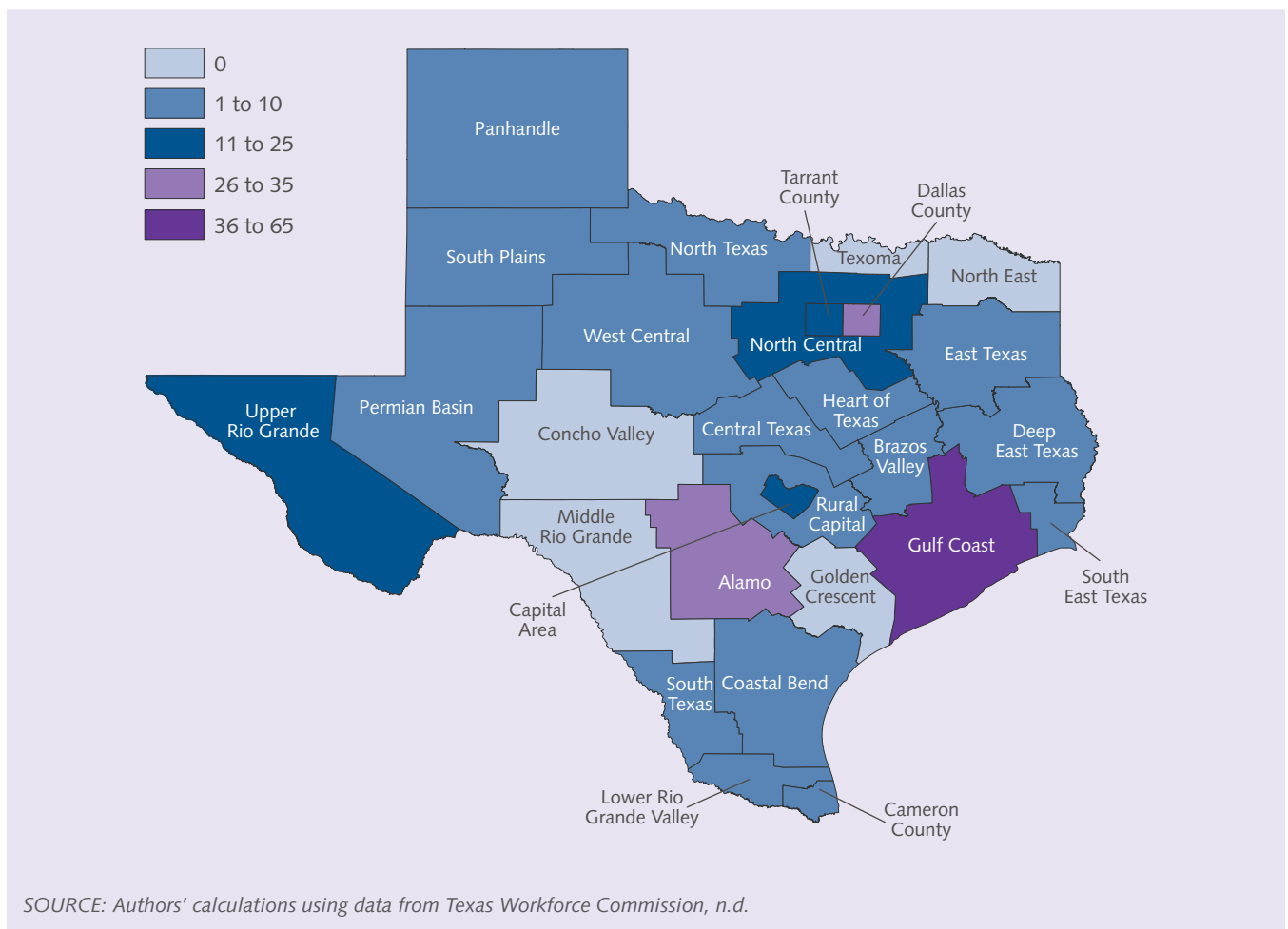
The employment requirements of fire departments across Texas vary, but the Texas Commission on Fire Protection requires that all paid firefighters earn a “basic structure fire protection” certificate with six key steps, including completing a basic firefighter training program and passing a criminal background check (Texas Commission on Fire Protection, n.d.). Many firefighters pursue associate degrees, but it is unlikely that entry-level standards will ever reach the baccalaureate level. Data from the Department of Labor indicate that, even at the supervisory and administrative levels, the entry-level education requirements are at the certificate or associate level. ACS data (U.S. Census Bureau, n.d.) show that, among first-line supervisors of firefighting and fire prevention workers in Texas, only 36.9 percent had a baccalaureate as of 2013. Nevertheless, all of our employer interviewees stated that degree requirements have begun to increase, and many fire departments now require candidates for supervisory and administrative positions to have bachelor’s degrees. This is particularly true in some of the larger urban fire departments. Several of the fire chiefs and fire sciences faculty members we interviewed reported having to seek out degree programs in other states to obtain their own bachelor’s and graduate degrees in fire sciences.

The U.S. Fire Administration has created a standard model for fire sciences that could be applied nationally. Associate-level fire sciences degree programs primarily focus on a skills-based curriculum that allows students to successfully pass certification tests while also providing a more in-depth look at structural issues and the major principles of fire sciences (U.S. Fire Administration, 2014). At the bachelor’s level, the courses provide opportunities to explore leadership and research in more depth and prepare for additional certification exams. Both employers and community colleges contend that baccalaureate programs can provide midcareer firefighters with the leadership and business management skills to manage successful teams and conduct administrative duties.

### *The Level of Demand for Baccalaureate-Degreed Individuals*

The number of jobs in the supervision of firefighters and administration of fire departments is expected to see steady growth, with a projected increase in positions of 20 percent between 2010 and 2020. In Texas there are approximately

**Figure 4.4.** Projected Annual Openings in Management in Fire Sciences Positions Between 2010 and 2020, by WDA



4,950 first-line supervisors of firefighting and fire-prevention workers, 37 percent of whom, as noted, have at least a baccalaureate degree. Statewide, 300 management positions are projected to be available annually through 2020. If we assume that new hires will have educational qualifications similar to the current workforce, the total number of positions requiring baccalaureate-degreed workers might be around 110. If the perceptions of the employers we interviewed are accurate and the educational requirements are increasing, the number of baccalaureate-degreed supervisors needed might be substantially higher. Still, these relatively small numbers of potential students will not support more than a few programs across the state. As we discuss later, consideration of economies of scale may be especially important for this field.

Figure 4.4 shows projected annual openings in firefighting supervisory positions between 2010 and 2020. Firefighting needs are closely tied to population numbers, so most openings will likely be in large population centers. Only the Gulf Coast and DFW have more than 20 openings for baccalaureate-degreed candidates each year.

This suggests that face-to-face programs may not be sustainable in any region of the state. In fact, both employers and institutional stakeholders told us that online programs were highly desirable for individuals in these occupations, given their rotating schedules and long hours. Thus, the location of programs may not be an issue in meeting these workforce needs.

### *The Supply of Baccalaureate-Degreed Individuals*

As of early 2014, there were 43 fire sciences programs in the state at the certificate and associate degree levels but none at the baccalaureate level. Although workforce demand is relatively small, with approximately 100 baccalaureate-degreed positions open each year, employers expressed a strong need for such programs. In many cases, individuals who desire a baccalaureate degree must go out of state. Our interviewees told us that Texas firefighters attend out-of-state programs, such as those at Grand Canyon University and Oklahoma State University, to pursue baccalaureate degrees.

Potential limitations on the supply of baccalaureate programs in Texas are House Bills 2013 and 2347, which were adopted in 2009 and amended Section 54.208 of the Texas education code. These bills exempted all firefighters and public safety officers from paying tuition at state institutions when employed and pursuing a career-related associate or baccalaureate degree. According to stakeholders, this makes the provision of programs in the fire sciences relatively costly for community colleges and universities, as the institutions are not reimbursed for the tuition. Interviewees also reported that, other than Texas A&M, universities have shown little interest in fire sciences because the field is believed to be more suited to community colleges and fire academies.

It is possible that general applied business degree programs may be able to meet fire sciences workforce needs. General applied business degree programs focus on KSAs in administration, human resources, and accounting that can be applied to a range of industries. Yet employers also expressed a desire for programs that are specifically tailored to the needs of fire sciences occupations. The fire sciences may require specific courses—such as safety—but these needs may be met by adding a few courses to existing programs, an option that likely will be cheaper than developing new programs in the fire sciences. In addition, several of the community colleges with an interest in providing such a program could consider combining it with other fields in public services, such as public safety. If these general programs can meet workforce needs, then the BAAS and BAT programs in business administration and organizational management should be considered potential sources of supply for fire sciences, and these programs should be marketed more broadly to individuals hoping to advance in the fire sciences.

If stakeholders determine that programs specific to fire sciences would be helpful in meeting workforce needs, then the absence of such programs in Texas suggests that at least one program should be introduced. Given the lack of revenue from tuition and firefighters' preference for online programs, it is unlikely that there is a need for more than one or two focused programs in the state.

## **Management of Production/ Operations Technicians**

### *The Need for Baccalaureate-Degreed Individuals*

The case for baccalaureate degrees in the petrochemical industry and in manufacturing and operations industries lies in the need to enable technicians to move into supervisory and administrative positions. (This is similar to the case for baccalaureate degrees in fire sciences.) Whereas associate programs focus on building technical skills, baccalaureate-level education would focus on business and management, safety, accounting, and other administrative areas. Entry-level educational requirements for technicians are generally low, typically requiring a high school degree at most. Even supervisory programs typically do not require a certificate or degree; indeed, as of 2012, only 12.5 percent of first-line supervisors of production and operating technicians in Texas had baccalaureate degrees (U.S. Census Bureau, n.d.). In regions of Texas that host large oil and gas industries, however, substantial numbers of associate-degree programs prepare technicians for work in these industries, and these programs enjoy a steady stream of enrollees.

According to those we interviewed, employers are beginning to require candidates for management posts to hold bachelor's degrees, particularly at some of the largest companies. In the petrochemical industry, technicians without bachelor's degrees are unable to advance into management positions, which are filled by engineers instead. Several employers and community college interviewees reported that successfully overseeing technicians requires applied technical expertise, and many engineers lack this expertise and so (according to one community college interviewee) they may be sent to community colleges to receive technical training. In Brazosport, employers are paying the tuition of baccalaureate students, signaling a clear demand for candidates who have both baccalaureate and technical expertise.

### *The Level of Demand for Baccalaureate-Degreed Individuals*

The oil and gas industry is booming right now. Texas leads the nation in total energy production, which primarily comes from crude oil and natural gas.<sup>7</sup> Texas also leads the country in crude oil reserves and production, and the largest reserves are located in the fields of the Permian Basin of West Texas.

<sup>7</sup> All data in this paragraph are from U.S. Energy Information Administration, 2013.

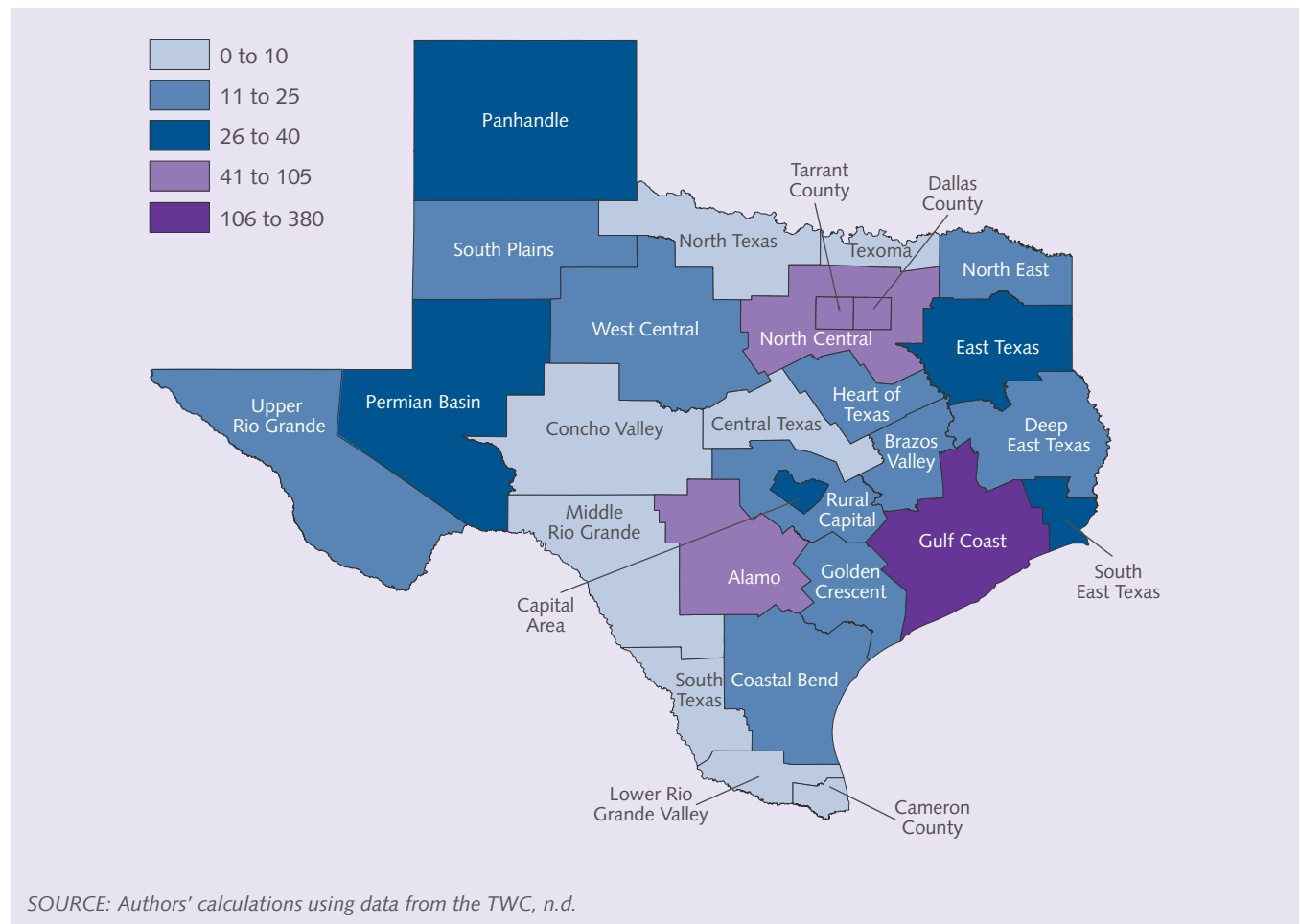
Although the first major oil boom in Texas started over a century ago, 2010 signaled a shift in increased petroleum production due to advances in production technology that allowed producers to turn out 1.9 million barrels per day by mid-2012. Additionally, close to one-third of the nation's natural gas reserves are in Texas, the lead producer of natural gas. Most of the state's natural gas fields are located in the East Texas basin and the Fort Worth basin. The Eagle Ford Shale, located in South Texas, has begun to produce substantial amounts of natural gas and petroleum-based liquids from more than 20 fields in 23 counties.

The TWC (n.d.) estimates that in 2014, across the range of industries involved in production and operations, there were more than 48,000 first-line supervisors in Texas. Figure 4.5 shows projected annual job openings in production and operations supervision between 2010 and 2020 by WDA. Statewide, more than 1,000 new positions will open each year. Given that only 12.5 percent of individuals in these occupations have baccalaureate degrees, we might expect only 125 of the open positions are for baccalaureate-degreed supervisors.

The regional distribution of production and operations supervisory positions indicates that demand is particularly high in the Gulf Coast region. In fact, more than one-third of all open positions each year can be found along the Gulf Coast, accounting for an estimated 48 open positions annually that might require baccalaureate degrees. The Gulf Coast, with its vast complex of more than 200 chemical plants and refineries, is the largest petrochemical complex in the world (Office of the Governor, 2005). The state is seeking stronger partnerships between local community colleges and universities in this region, with the goals of reducing reliance on international workers and increasing employment of Texas workers.

Even in the Gulf Coast region, there may not be enough demand to support more than one or two face-to-face or blended programs that meet these workforce needs. DFW also may have sufficient demand to offer a program to serve regional-specific needs; of its 275 total open positions, 34 might require candidates with baccalaureate degrees.

**Figure 4.5.** Projected Annual Openings in Management of Production/Operations Technicians Positions Between 2010 and 2020, by WDA



## *The Supply of Baccalaureate-Degreed Individuals*

The supply of degrees that prepare individuals for production and operations supervisory positions is difficult to measure for two reasons: the programs vary widely in name, and they are typically not tailored to a single industry or occupation. As of early 2014, three colleges plan to offer pilot programs to serve these workforce needs: the organizational management degrees offered by Midland College and South Texas College and the more specialized tracks offered by Brazosport (which include process management and business administration). The BAT and BAAS programs at Tarleton State and UT–Brownsville are also specifically tailored to business administration and may be able to meet these workforce needs.

The bigger question is whether multidisciplinary BAAS programs also can meet workforce needs in management of production and operations technicians. These programs are provided at many universities across the state and are capable of graduating large numbers of students. Many of these colleges have well-established business and leadership courses that may be able to provide high-quality business education to managers of production and operations technicians. Many of these programs are provided online, which would help meet the needs of working individuals pursuing baccalaureate degrees to advance in their careers. Employers in these industries, however, reported that they are looking for applied management and supervisory skills rather than theoretical business expertise, so the coursework available at universities may not suffice to help individuals deal with the practical issues they will encounter at production and operations plants.

## **Health Information Technology**

### *The Need for Baccalaureate-Degreed Individuals*

As of early 2014, the Texas Department of State Health Services did not require certification or licensing in health information technology. Many individuals who work in the medical records and health information technology occupations in Texas have no education beyond high school, and only 13.5 percent hold a bachelor's degree. Nevertheless, a number of students seek certification and take the Registered Health Information Technician certification exam after completing an accredited associate-level health program. The Department of Labor specifies entry-level education at the certificate or associate level. Associate-level programs focus on the collection, integration, and analysis of primary

and secondary healthcare data. They also teach students to disseminate information and manage information resources related to research, planning, provision, and evaluation of healthcare services. According to employers, associate degrees rarely are required for entry into occupations in medical records coding, which are now referred to as health information technology.

There are, however, at least two types of occupations in health information areas that are likely to require baccalaureate-level or graduate-level education: occupations that involve the design and management of data systems and require advanced skills in information technology, and management occupations overseeing health information technology departments.

According to employers and institutional stakeholders, occupations in the design and management of health information systems typically require graduate-level education. Graduate programs in health information technology typically do not build directly on the KSAs developed in health information technology associate degree programs; instead, these graduate programs build on advanced skills systems analysis, information technology, or nursing. Employers and institutional stakeholders suggested that the preferred background for these programs is experience in nursing or information technology and that a baccalaureate that focuses specifically on health information technology would not be necessary or ideal for building skills.

Occupations in health care information management require individuals to develop additional skills in management and administration in order to oversee medical records teams or those who help develop and manage complex electronic systems. These needs could be met through specific programs in health information management, more general health management and administration programs, or business or management programs that prepare students for management in a wide range of industries. Employers and institutions suggested that individuals with other types of baccalaureate degrees like nursing or information technology may also be able to fill management positions with some coursework to close skill gaps.

A number of shifts are taking place in the healthcare sector. Major initiatives include the transition from paper to electronic records and increased efforts to analyze electronic medical records to improve care. Since 2010, the proportion of hospitals using electronic healthcare records has tripled (Robert Wood Johnson Foundation, 2013). As such fields as health informatics grow and the sector transitions to

new systems and processes, the workforce will change, and degree programs may also need to change to meet new workforce needs.

### The Level of Demand for Baccalaureate-Degreed Individuals

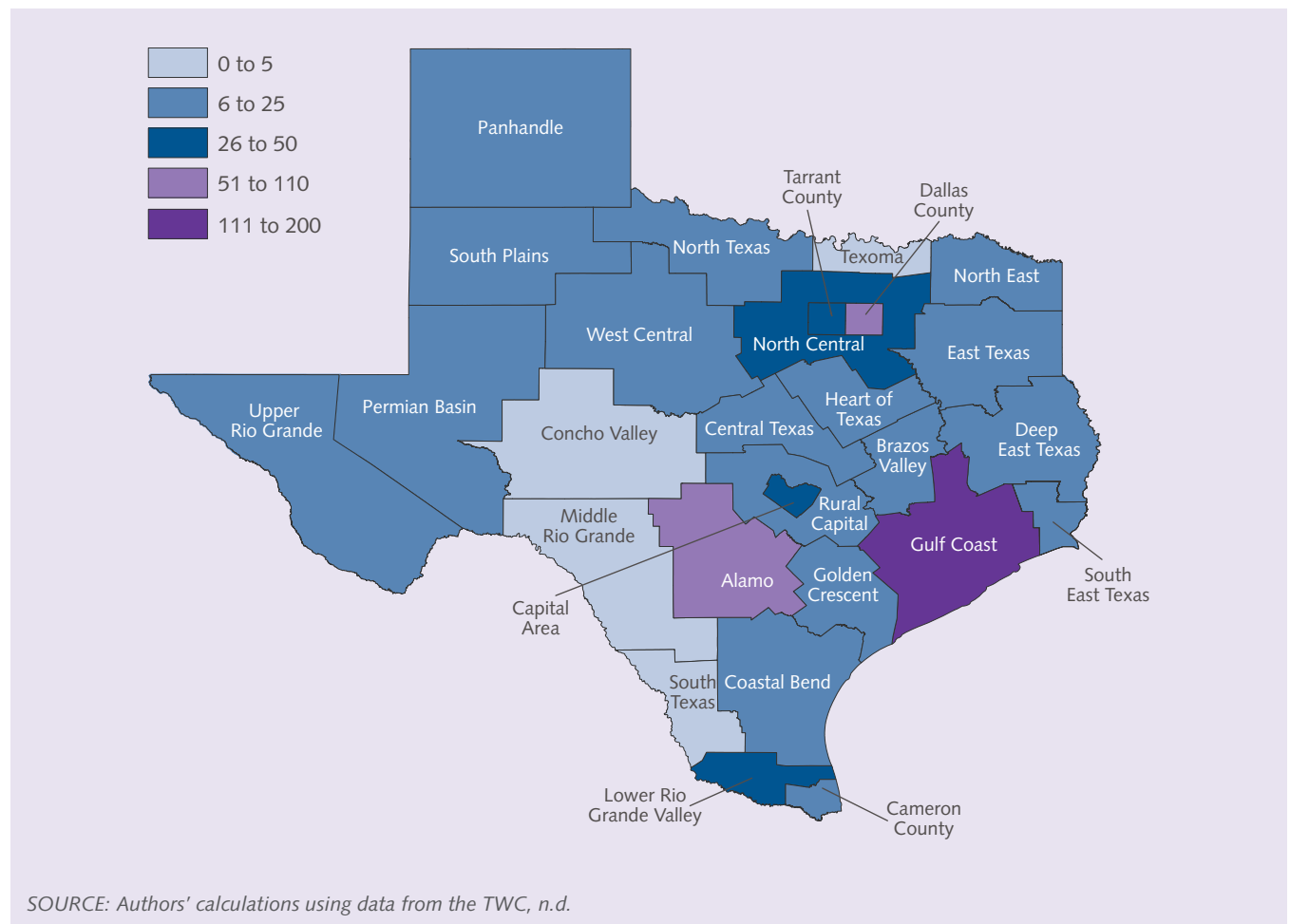
Given our qualitative findings that few jobs in health information require a baccalaureate degree, quantitative analysis of open positions may not provide any additional useful information. The data indicate that this should not be a priority field for community college baccalaureate expansion. For the sake of completeness, however, we do present the data on workforce demand across all educational levels.

Figure 4.6 shows projected annual openings in health information technology positions between 2010 and 2020. Given that individuals with baccalaureate degrees currently hold only 13.5 percent of the 785 open positions, we might expect 106 open positions for baccalaureate-degreed candidates—enough to sustain only a few programs statewide.

The Gulf Coast and DFW account for more than half of all open positions, and therefore may be the only regions that could support face-to-face programs. Even in the Alamo region, there are fewer than 76 total open positions, and we expect only 10 to be filled by candidates with baccalaureate degrees—a situation that is not likely to be sufficient to sustain a program, given other potential sources of workforce supply (e.g., nurses, information technology graduates, migrants). Across the rest of the state, the number of open positions is small. In particular, when we consider the lower educational expectations for workers in rural areas, the workforce demand for baccalaureate-degreed workers in health information technology is likely to be very small.

The majority of stakeholders in this study did not identify an impending workforce need that will necessitate the development of new baccalaureate degrees in health information technology. Some stated preferences for candidates with full nursing degrees or bachelor's degrees in computer and information technology; these individuals would then gain the needed health and information technology KSAs through on-the-job training or through graduate or certificate

**Figure 4.6.** Projected Annual Openings in Health Information Technology Positions Between 2010 and 2020, by WDA





programs. These interviewees contended that there may be some small need for industry-specific baccalaureate programs that provide both the health and information technology components needed for these positions.

### *The Supply of Baccalaureate-Degreed Individuals*

Baccalaureate programs in health information administration are relatively rare. Texas Southern University and Texas State University offer the only programs, which graduated only 68 students in 2013. These programs prepare students to not only complete the job functions of a health information management professional but also manage health information systems. According to interviewees, there are relatively few baccalaureate-level positions in health information

management, so graduates of these programs typically intend to continue with graduate education.

In health information technology, there are a growing number of graduate programs for systems design and management. As noted earlier, many employers prefer candidates with nursing or information technology degrees and do not believe that specific degree programs are required to meet workforce needs.

For the occupations focused on coding, some community colleges are adding associate-level programs to build on certificate-level education. However, we heard from employers and institutional stakeholders that the level of preparation needed for these positions is unlikely to ever reach the level of the baccalaureate. Some stakeholders also reported that the low salaries for coding positions are insufficient to support baccalaureate-level education.

## Summary

We have assessed the unmet workforce needs in five occupational groups of interest by examining the need for a baccalaureate degree in the workforce, the level of demand for bachelor's graduates, and the current sources of supply. This analysis does not directly estimate the size of the unmet workforce needs, but provides some evidence to help the state prioritize the occupations in which unmet needs appear to be greatest and develop degree programs to meet these needs.

■ **Nursing.** Texas, like many other states, is facing serious nursing shortages, and the 2010 recommendation of the Institute of Medicine for 80 percent of RNs to hold a BSN by 2020 has placed particular pressure on colleges and universities to produce baccalaureate-degreed nurses. Currently, 51 percent of nurses in Texas hold BSN degrees, and maintaining that level means that the state must continue to produce at least 5,000 BSN graduates each year. To meet the need for additional BSNs, RN-to-BSN programs have been growing rapidly—especially the UT–Arlington online program—and there have been increasing efforts to support partnerships with ADN programs. The state is currently graduating more than 7,000 BSNs each year, and graduation numbers are expected to increase substantially in the next few years due to a large increase in UT–Arlington enrollment. This indicates that existing programs are making significant progress in helping to move the state toward the 80 percent target. In urban

areas where the pressure to reach 80 percent BSNs is greater (due to magnet hospitals), additional capacity may be needed to meet workforce needs. A particular challenge in nursing is the lack of terminally degreed faculty, which limits the ability of program expansion at all types of institutions.

- **Computer and information technology.** Computer and information technology occupations increasingly demand skills that go beyond an associate degree, even though associate degrees and advanced certificates have become a common alternative to earning a bachelor's degree. The need for baccalaureate-degreed individuals in these occupations is particularly high in urban areas. Production of graduates from information technology programs does not appear to be sufficient to meet the level of demand, with existing programs reporting relatively low levels of student interest and additional capacity. New pathways may be useful if they are able to bring new students to the degree programs, but to the degree that new programs are competing for students with existing programs, sustainability of the programs may be difficult.
- **Management in fire sciences.** Employers looking to fill management positions in fire sciences occupations increasingly are giving preference to candidates with bachelor's degrees. Employers prefer industry-specific degrees, but Texas currently has no specific programs in

the management of fire sciences. Certain BAAS programs that are offered at universities may be able to meet these needs if universities offer a few industry-specific courses, but these courses may not provide the level of fire sciences context that employers prefer. The state and institutions will need to determine whether the preference for industry-specific programs is sufficient to necessitate new program development. The state has a modest demand for baccalaureate-degreed individuals in fire sciences. This need is spread around the state, so programs would need to draw from the statewide demand, likely through distance learning. The numbers may be sufficient to support only one or two programs. A key limitation to sustaining or expanding programs is that working firefighters, who will generate the demand for these programs, are exempt from paying tuition for such courses.

- **Management of production/operations technicians.** The management of production/operations technicians occupations is typically a career progression for technicians who enter with associate degrees. For these technicians to move into management positions, some employers require baccalaureate-level education in leadership and business. The modest demand for these management positions is highly concentrated in specific regions, especially the Gulf Coast, and in specific industries or by large employers. Any programs that are developed should be placed in the regions with greatest need. Similar to fire sciences, BAAS programs at universities might be able to meet these needs but might not be able to provide the level of industry-specific content that employers prefer, and the state must determine whether the evidence is sufficient to support such programs. Baccalaureate-granting community colleges and a few of the regional universities offer more targeted programs that can also meet this need.

- **Health information technology.** There are several types of health information occupations, and they have varying degree needs. Medical records coding positions, those for which associate-level programs are targeted, are not expected to require baccalaureate-level individuals. Occupations in the design of health information systems and data management tend to have education requirements that fall at the graduate levels. Employers and institutional stakeholders report that these graduate programs typically draw individuals with nursing or information technology degrees, and there is currently no need for health information-specific programs to feed these programs. Occupations in the management of health information departments also draw individuals from nursing and information technology, though some report that health information management programs can be useful in building the management skills needed for these positions. Like fire sciences and production/operations technology, more general health administration programs and BAAS programs also may be able to help meet management workforce needs. The two existing health information management programs and other degree pathways appear to be meeting workforce needs, and the data suggest that health information technology and health information management degree programs should not be prioritized in the development of new baccalaureate programs.



# 5 Potential Benefits of Community College Baccalaureate Expansion

Texas could realize a range of potential benefits from expanding community college baccalaureate programs. These benefits include:

- helping meet workforce needs;
- increasing student access and degree attainment;
- providing greater experience with applied education; and
- providing a small, supportive environment for students.

Although all of our community college interviewees cited the potential benefits of baccalaureate expansion, institutional leadership at only about half of the community colleges expressed a clear interest in offering their own baccalaureate programs.

Employers generally agreed that community colleges could play an important role in meeting workforce needs and increasing student access to higher education. They also seemed satisfied with the quality of community college graduates and confident in the ability of community colleges to provide baccalaureate programs. University stakeholders had less positive attitudes toward community college baccalaureate expansion, with many unable to envision a single benefit from community college baccalaureate programs. Nevertheless, several university stakeholders said that community colleges may provide some value in developing programs (e.g., fire sciences) that are of no interest to universities at lower cost to students.

## The Ability to Help Meet Local Workforce Needs

A major focus of higher education is meeting workforce needs. Graduates' educational qualifications may fall short and the KSAs they acquire in degree programs may not match well with occupational needs. Employers in some

industries wished that their employees with associate degrees had more advanced technical, management, and leadership skills, as well as general skills (e.g., critical thinking, communications, and writing skills) that are traditionally

associated with baccalaureate-level education. Both employers and community college representatives suggested that existing associate-level programs are not meeting some needs and that increasing the number of applied baccalaureate programs is a desirable way of providing some of the KSAs that traditional baccalaureate programs impart within an applied context.

Stakeholders emphasized that the ability of community colleges to meet local workforce needs through the production of baccalaureate degree-holders would be an important benefit to the community. Some stakeholders suggested that community colleges may be better positioned to meet regionally focused needs and develop specific KSAs that particular employers need because community colleges have connections with employers and have flexibility in creating and modifying programs. Additionally, community college graduates are more likely to remain in the geographic area after graduation.

## Connections with Employers

The THECB (n.d., 2) has recommended making “partnerships and collaborations between the business community and higher education institutions a part of the culture of these organizations” as a means for increasing success in higher education. By collaborating directly with employers, institutions can better ensure their programs meet workforce needs. This may be particularly true for applied programs, which prepare graduates for specific occupations. Regardless of the institution that provides the applied baccalaureate program, institutions and employers agreed that employers should be engaged in program design.

Community college stakeholders often emphasized their efforts to connect with employers, contending that employer connections are not a priority for most universities. Some university interviewees also acknowledged that they need to improve their connections with employers. In nursing, universities and community colleges already work closely with employers to support the clinical experiences of students. A small group of regional universities in Texas, including Tarleton State and UT–Brownsville, has a history of offering applied programs that involve relationships with employers similar to those in community colleges.

Representatives from community colleges and the few universities with an applied focus often noted that their advisory boards help develop and improve applied degree programs. Some local employers have donated substantial sums of money to support community college programs

**Community colleges may be better positioned to meet regionally focused needs and develop specific KSAs that particular employers need because community colleges have connections with employers and have flexibility in creating and modifying programs.**

and facilities. Several employers also mentioned that they prefer the training provided by community colleges because the programs enable students to “hit the ground running,” implying that these programs are better designed to meet employer needs. Representatives of two community colleges mentioned that employers sometimes send university graduates to their institutions to acquire the applied training needed to perform well in a specific job.

## Flexibility in Creating and Modifying Programs

Compared with traditional academic degrees, applied degrees may meet more specific workforce needs. Because such needs are likely to change over time, degree programs should be flexible enough to accommodate evolving needs. While universities and community colleges regularly propose new degree programs, interviewees at community colleges suggested that community colleges have greater flexibility than universities in creating and modifying programs for specialized workforce needs. They further suggested that proposed changes to university degree offerings may take longer and involve more intensive processes and that many universities may particularly resist developing applied degrees. Community college representatives reported working closely with local employers to create new programs or modify existing ones. However, data from the THECB on new degree programs tell a different story: Texas universities introduced as many new degree programs as community colleges did in the past three years.

## Community College Graduates More Likely to Remain in Community

Employer and community college stakeholders reported that another advantage of community colleges is the greater likelihood of their graduates remaining in the community. This is particularly relevant in rural areas, where employers reported difficulties keeping baccalaureate graduates who often move to urban centers for more attractive employment

opportunities. Our analysis of Department of Motor Vehicles and unemployment data for college degree recipients in Texas (conducted for a related project) found that community college graduates indeed are more likely to remain in the same region for at least three years after graduation. Yet it is unclear whether community college baccalaureate graduates are as likely to remain in their communities. Students who enroll in

a community college program because they are place-bound and unable to move to attend a university may remain in the region. If employment opportunities are substantially more attractive elsewhere, however, baccalaureate graduates may move, regardless of the type of institution from which they graduate. Mobility is particularly high among those in nursing or computer and information technology.

## The Potential for Increased Student Access and Degree Attainment

While Texas seeks to meet workforce needs through degree program expansion, it seeks other benefits as well. As the THECB (n.d., 4) notes:

*... People with a college education earn larger salaries and see greater financial benefits over their lifetimes. They also have greater job satisfaction and employment opportunities, and are more likely to give back to their communities. Their higher earnings contribute to the state's economic base through taxes and they are less likely to require public assistance.*

The THECB notes that growth in degree-holders has not kept pace with population growth in the state, jeopardizing its position in the world economy. To expand the pool of students who are pursuing and achieving college degrees, the state has encouraged development of a range of seamless pathways for students into higher education. Efforts have particularly focused on increasing degree attainment among low-income and minority students, as these students are more likely to fall behind academically and less likely to be well represented in high-earning occupations (Chen and DesJardins, 2008; Thomas, 2011). Florida and Washington state officials told us that, compared to universities, their community colleges have enrolled more nontraditional baccalaureate students, including older, working, and minority students. Advocates of community college baccalaureate programs suggest such programs will both provide even stronger pathways to baccalaureate-level education and expand the pool of baccalaureate enrollees by appealing to students who otherwise would not pursue a baccalaureate. Four potential access-related benefits of expanding baccalaureate programs are:

- lower cost to students;
- greater flexibility in course scheduling and delivery;
- open-enrollment policies; and
- seamless transitions.

### Lower Cost to Students

Every stakeholder we interviewed acknowledged that community colleges can provide education at a lower cost to students than universities. Low tuition costs at community colleges have helped make college accessible to a broad population, regardless of the type or length of studies students ultimately pursue. In Chapter 7, we examine the evidence regarding costs for students at community colleges, and prospects for the future.

### Greater Flexibility in Course Scheduling and Delivery

Community colleges have developed methods to meet the needs of diverse and nontraditional students. One means of doing so has been to provide flexible scheduling, identified by the Advisory Committee on Student Financial Assistance (2012) as a best practice for ensuring the success of nontraditional students by enabling them to accommodate work and personal obligations while completing college courses.

Another best practice recommended by the Advisory Committee on Student Financial Assistance for serving nontraditional students is using a blended or fully online approach to instruction. Online course options are growing at both two-year and four-year universities, and applied baccalaureate programs in Texas have been particularly accessible through online formats. Online program options also are valuable for students who are place-bound or located far from an appropriate institution. Stakeholders cautioned that online education is not universally appropriate for all students. For instance, online programs may not be suitable for students who require additional support or who lack the motivation and self-discipline required to remain focused. Still, expansion of online education has helped provide many students with greater access to a wider range of potential degree programs.

Institution-level interviewees in Texas suggested that students in applied baccalaureate programs may be older and more likely to be employed than those in certificate and associate-level programs. Many applied baccalaureate programs are specifically designed to provide midcareer training for individuals who have long been employed and want to move into middle management. Both employers and institutional leaders recognize that flexible scheduling and online learning opportunities for applied baccalaureate programs are essential to older nontraditional students who have other responsibilities. Such needs are particularly great for those who work in occupations with nontraditional or variable schedules. For example, firefighters likely would be unable to attend weekly classes, given that they typically work 24-hour schedules on rotating days each week. Nurses also contend with nontraditional hours and rotating schedules.

## Open-Enrollment Policies

Open-enrollment policies—the practice of accepting any student with a high school diploma or a General Educational Development (GED) certificate—are an important part of making higher education broadly accessible. Altogether, 104 colleges in Texas, including the state's 72 community colleges, have open-enrollment policies (College Board, n.d.). By accepting all students and using developmental programs to help those who may not be ready for college, community colleges draw students who otherwise might not pursue higher education.

Not all programs at community colleges are open-enrollment programs. For example, most ADN programs have admission requirements beyond a high school diploma or GED. Many of these additional requirements are academic but include a background check as well. Admission to applied baccalaureate programs in Texas—whether offered by universities or community colleges—generally requires an associate degree in a technical field (THECB, 2009). Students also must have completed developmental education requirements as well as upper-division course requirements. Admissions policies of schools vary as well. Among the community colleges that offer applied baccalaureates, for example, admissions at Midland College are generally open, whereas Brazosport College and South Texas College have selective programs, with admission depending on grade point average and test scores.

If community college baccalaureate programs are expanded in Texas, they likely will have varied admissions policies, similar to those in existing community college programs. Admissions also would vary by program, with such fields as nursing having more stringent entry requirements. That

said, admission requirements still may be lower than those of universities. More lenient admissions policies among community colleges ensure that some increased access is provided to nontraditional students, but the access to baccalaureate programs is likely to be significantly limited relative to associate-level programs.

**Flexible scheduling and online learning opportunities for applied baccalaureate programs are essential to older nontraditional students who have other responsibilities.**

## Seamless Transitions

Many stakeholders at both community colleges and universities noted that transfer from one institution to another can be a substantial barrier to degree completion. Particularly for nontraditional students or those who are not prepared to succeed in college, a simple transition from one institution to another, even within the same town, can be disruptive and lead to withdrawal from school. In many cases, students must deal with different policies and procedures, distinct school cultures, and different student populations.

Another major issue has been the transfer of technical credits into universities. Interviewees at community colleges view institutions with a record of applied baccalaureate support as having generous policies for accepting technical credits and supporting seamless transitions. They also note, however, that other universities refuse to accept technical credits during the transfer process, forcing students with technical associate degrees to essentially start from scratch. Differences in transfer policies among institutions can present challenges for both associate-level graduates and community colleges.

Many community college stakeholders said their colleges are well suited to providing applied baccalaureates because most enrollees in such programs originate in community colleges. Making classes easy to attend—even eliminating a simple crosstown commute from a community college to a university—can improve success rates. Students who do not live near a university with a relevant program—and especially students who are older and place-bound—are at even greater risk of not pursuing planned education because of transfer barriers. The familiarity of the community college setting also may be a benefit to students.

Texas educators are engaged in a number of efforts to smooth transitions from community colleges to universities. These cooperative efforts are likely to reduce some of the comparative advantages that community colleges have in providing seamless transitions. Of course, many students in nursing or applied science programs may have been out of college for several years and may not be directly transitioning from an associate degree program into a bachelor's program.

Also, many applied baccalaureate and nursing students may access part or all of a program online, which eliminates the importance of school context in determining whether a transition is seamless. In short, while the ability to move directly from the associate level to the baccalaureate level within a single community college may improve some students' access to baccalaureate-level education, it may be less important for others.

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## Greater Experience with Applied Education

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Community college stakeholders and employers suggested that many community colleges have more expertise and experience than universities in applied fields. These advantages stem from experience designing applied curricula, strong connections with employers, equipment and facilities required for technical fields, and a faculty dedicated to applied education. Even in computer and information technology—a field in which many universities offer courses comparable to those provided by community colleges—community college representatives argued that their programs develop unique skills that many employers seek.

Community colleges were less likely to claim instructional advantages in nursing, given that most universities also provide nursing programs. However, several community

college stakeholders, particularly those in rural areas, told us that employers prefer ADN students because they can immediately provide care. At least half the rural employers we interviewed echoed this sentiment (as did an occasional urban employer), arguing that although BSN programs may prepare students well for leadership and help them use evidence to make decisions, these students often are not prepared to care for patients and sometimes require additional on-the-job training. To be sure, some nursing employers preferred BSN graduates, and many expressed no preference at all, believing that individual experience matters most in successful nursing. Community colleges do not seem to have a clear, demonstrated expertise in nursing training that suggests their programs might be of higher quality.

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## Small and Supportive Environment for Students

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Community college baccalaureate programs are likely to be small and specialized. In these programs, students, instructors, and staff can develop close relationships that enhance chances of student success. These aspects of specialized programs (which also are offered at some universities) may help nontraditional students who are at risk of dropping out of the baccalaureate program.

### Smaller Class Sizes, Especially in Specialized Programs

Most community colleges offer significantly smaller class sizes than universities (College Board, 2007). Specialized programs like the potential baccalaureates are likely to have small class sizes. Community college representatives contended that smaller classes make students feel more accountable and give

students more time for direct interaction with instructors and other students. One community college administrator noted the value of taking attendance, and several graduates from existing community college baccalaureate programs described the close relationships they formed with their instructors. Small class sizes and personalized support may particularly help students who are at high risk of dropping out or not planning to pursue baccalaureate degrees.

### Stronger Systems of Student Support in Specialized Programs

One advantage of small class size is that instructors have greater opportunities to provide support to students. Small, specialized programs such as community college baccalaureates (and similar university programs) foster close



and supportive relationships among students, faculty, and staff. Several community college interviewees contended that supporting students both inside and outside the classroom is a greater focus at community colleges than at universities, given that community colleges primarily serve nontraditional students. Student counseling departments at both universities and community colleges, however, are severely understaffed (Merrow, 2007; Okpala, Hopson, and Okpala, 2011), suggesting that all institutions face barriers in effectively supporting students.

**Small class sizes and personalized support may particularly help students who are at high risk of dropping out or not planning to pursue baccalaureate degrees.**

## Summary

Community colleges may have a unique ability to meet workforce needs, given strong connections with employers and demonstrated willingness to work with them in creating programs. Some regional universities emphasize workforce relationships and applied program development, but many universities have not made this a priority. Given that associate-level community college students are somewhat more likely to remain in the region, community colleges' baccalaureate graduates may demonstrate similar mobility patterns, which would help meet local workforce needs. Although we found that community colleges may be more willing to develop applied degree programs, the evidence relating to speed and flexibility of program development at colleges was mixed. Program development may be as active at universities as at community colleges.

We also examined whether community colleges would provide access to baccalaureate-level education for more students in Texas. We found that, compared with universities, community colleges do serve a more diverse, nontraditional student population and attract students who otherwise would not pursue a baccalaureate. State officials in both Washington and Florida said that their community college baccalaureate programs have continued to attract students who are distinct from university baccalaureate enrollees. We described several features of community colleges that lead to greater access, including low costs, flexible scheduling, open-enrollment policies, and seamless transitions. The evidence suggests that baccalaureate programs at community colleges likely could retain at least two access-supporting features—flexible scheduling and seamless transitions—but community colleges may choose to establish more restrictive enrollment policies for baccalaureate programs.

Increased access provided by community colleges may differ by field and region. In some fields and regions, university programs already provide a wide range of accessible and relatively affordable degree options (including online degree programs), strong partnerships that allow for seamless transitions from lower- to higher-division programs, and policies that allow for acceptance of technical credits. In these instances, community colleges may end up competing with universities for the same pool of students rather than widening access to new students. Experience from other states suggests decisions to approve new programs should consider such potential competition and monitor student enrollment to ensure that community college programs are, in fact, increasing access.

Community colleges have greater experience offering applied programs, which may give them an advantage in developing applied baccalaureate programs. In many cases, these baccalaureate programs build directly on associate-level programs and require a clear understanding of workforce needs. This advantage may be weaker in nursing, given that most universities also provide nursing programs.

Specialized programs at community colleges (and also at some universities) offer small class sizes and may offer stronger systems of student support. Smaller class sizes can give students more time for direct interaction with instructors and other students, and help students feel more accountable in their work. Student counseling departments at both community colleges and universities are severely understaffed, however, which tempers this potential advantage that community colleges can provide in supporting students.

# 6 Concerns About Community College Baccalaureate Expansion

Different groups of stakeholders have different concerns about community college baccalaureate programs. University stakeholders and some employers assert that university baccalaureate programs in Texas are meeting workforce needs for many applied occupations. For unmet needs, they suggest that enhanced partnerships between community colleges and universities or university expansion are preferable to community college baccalaureate expansion. State-level policymakers and others also express concerns about the implications of community college baccalaureate expansion, including accreditation issues, though these problems have not materialized elsewhere. Community college interviewees raised concerns about mission creep, the effects on relationships with universities, and insufficient resources to fund high-quality baccalaureate programs at both universities and community colleges.

Altogether, we identified three primary concerns associated with community college baccalaureate expansion. These are:

- mission creep at community colleges;
- counterproductive competition between universities and community colleges; and
- a decline in the overall quality of the Texas baccalaureate.



# Mission Creep at Community Colleges

One of the most commonly cited concerns is that offering baccalaureate programs at community colleges will shift focus away from their traditional missions. This could leave the state with an oversupply of baccalaureate-level options but fewer opportunities to teach lower-level students. This concern was particularly common among university representatives but also was voiced at community colleges.

Some interviewees cited expansion in Florida as evidence for mission creep. In just 13 years, 26 of the 28 community colleges in the state have been authorized to provide baccalaureate degrees, and more than 170 baccalaureate programs have been developed across these institutions. Many of the colleges dropped the word *community* from their names and, in at least one case, even opted to become a state college (Floyd, 2006). One interviewee claimed name changes were perceived by many in Florida as evidence of these colleges' departure from their traditional missions.

Concerns about mission creep are largely driven by fears that there will be “no turning back” once the state decides to pursue baccalaureate expansion because the colleges have incentives to prefer baccalaureate programs over certificate and degree ones. Yet stakeholder opinions and evidence are mixed on this point. The 170 community college baccalaureate programs in Florida account for only six percent of baccalaureate enrollment in the state. In fall 2013, baccalaureate-level enrollees accounted for an even smaller portion of enrollments at the three community colleges offering baccalaureate degrees in Texas: 2.3 percent at Brazosport, 1.1 percent at Midland, and 1.0 percent at South Texas (Higher Education Accountability System, n.d.). These community colleges are generally interested in expanding their baccalaureate programs but have qualified this interest by developing programs only in the case of unmet workforce needs and strong student demand. At community colleges without baccalaureate programs, not all stakeholders wish to expand. In fact, fewer than half of the community colleges in our sample had a strong interest in baccalaureate programs.

We identified three primary concerns associated with mission creep at community colleges. These are:

- reduced focus on certificate and associate degree programs;
- increased cost to students; and
- the elimination of open-enrollment policies.

## Reduced Focus on Certificate and Associate Degree Programs

Many stakeholders worried that baccalaureate expansion would shift focus from certificate and associate degree programs. Institutions that hope to increase their prestige or market share might increase their focus on baccalaureate programs without regard to the effects on two-year degree programs. The greater tuition and state reimbursement revenues institutions receive for upper-division courses (which we discuss in Chapter 7) might help shift priority toward baccalaureate programs. Stakeholders from universities and community colleges also worried about divisions among faculty resulting from the perceived advantage of teaching baccalaureate-level courses, although stakeholders at Texas community colleges currently offering baccalaureates told us this has not been a problem.

**Many stakeholders worried that community college baccalaureate expansion would shift focus from certificate and associate degree programs and increase costs for all of their students.**

Although there are incentives to focus on baccalaureate programs, it is not clear that a shift from associate- and certificate-level education ultimately would benefit community colleges. Given that their baccalaureate programs are typically fed by existing associate degree graduates, it would seem counterproductive for community colleges to reduce the quality of or access to these feeder programs. In addition, community college stakeholders expressed a strong commitment to focusing on the needs of all of their students. Several community college interviewees argued that offering baccalaureate programs would provide associate degree students with additional opportunities for advancement and success. Community college interviewees and employers added that it is important to provide educational pathways with multiple points of entry and exit, both to allow students to accommodate life needs and to ensure that they receive sufficient work experience to complement their education.

Graduation rates of students in certificate and associate programs have not diminished during baccalaureate expansion at community colleges in Texas or in other states. Figure 6.1 shows that the three-year graduation rates for associate degree students in Florida increased markedly during community college baccalaureate expansion that began after the 2001 authorization, and that six-year graduation rates for baccalaureates remained relatively stable. Persistence rates display a similar pattern. In Washington, between 2004 and 2010, three-year graduation rates for associate students increased from 28 percent to 33 percent, and six-year graduation rates remained stable at 63 percent.<sup>8</sup> In the same period, first-year retention rates for community college students remained stable at 55 percent, while university retention rates declined from 85 percent to 80 percent. To be sure, there may have been other contributors to these outcomes, but these data do not show expansion of

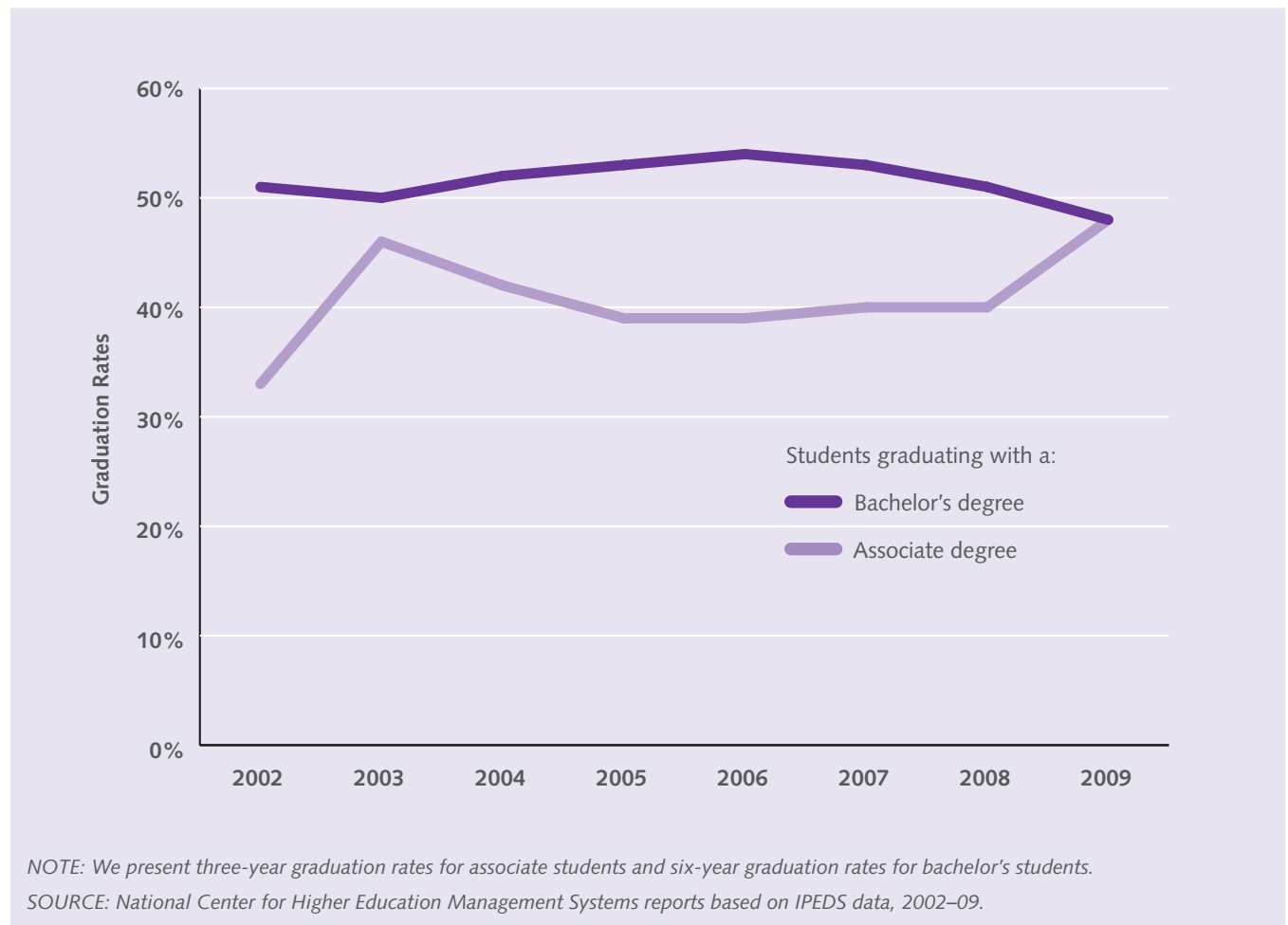
baccalaureate programs adversely affecting enrollment and graduation rates. Policymakers may wish to closely examine spending allocations and other measures of student growth and success to completely eliminate concerns about focus shifting from certificate and associate degree programs.

## Increased Cost to Students

Another concern related to mission creep is that baccalaureate programs at community colleges will be relatively expensive to establish and maintain, resulting in higher costs to all students. In Chapter 7, we review these cost considerations in more detail.

Tuition rate growth in Florida and Washington can help shed light on this question. Table 6.1 shows that the cost of higher education is growing at both universities and community colleges in both states. Community college tuition, however, is growing at a slower rate than university tuition.

**Figure 6.1.** Florida Graduation Rates for Bachelor's- and Associate-Level Students



<sup>8</sup> These statistics came from state-level profiles compiled by the National Center for Higher Education Management Systems. The data are drawn from the Integrated Postsecondary Education Data System (IPEDS).

**Table 6.1.** Tuition Rate Growth in Florida and Washington, 2004–05 and 2013–14

	2004–05	2013–14	Change, 2004–05 to 2013–14
Florida, two-year lower-division	\$2,195	\$3,140	43%
Florida, four-year	\$3,767	\$6,336	68%
Washington, two-year lower-division	\$3,061	\$4,304	41%
Washington, four-year	\$6,061	\$10,811	78%

SOURCE: The College Board, 2014.

Within Texas, as Table 6.2 shows, lower-division tuition growth at two of the community colleges offering pilot baccalaureate programs—Midland and South Texas—has

been slightly above statewide growth. Tuition growth at Brazosport, however, was more than double the statewide average.

**Table 6.2.** Lower-Division Tuition Rate Growth at the Three Community Colleges with Pilot Programs, 2009–13

	2009	2010	2011	2012	2013	Change, 2009–13
Brazosport College	\$1,392	\$1,542	\$1,692	\$1,962	\$2,295	65%
Midland College	\$1,638	\$1,800	\$1,800	\$2,160	\$2,160	32%
South Texas College	\$2,320	\$2,710	\$2,980	\$3,150	\$3,150	36%
<b>Statewide average</b>	<b>\$1,779</b>	<b>\$1,873</b>	<b>\$1,917</b>	<b>\$2,145</b>	<b>\$2,284</b>	<b>28%</b>

SOURCE: THECB, 2013b.

### Elimination of Open-Enrollment Policies

Elimination of open-enrollment policies was not a concern for most community college and university interviewees. Indeed, given that many community colleges already

administer programs (such as nursing) that do not have open enrollment suggests that these institutions can simultaneously ensure a population of sufficiently prepared students for baccalaureate programs and maintain open-enrollment policies for other programs.

## Counterproductive University–Community College Competition

Stakeholders across all groups expressed concern that baccalaureate expansion would lead to increased competition—for students, faculty, funding, and other resources—between community colleges and universities, and that much of this competition would be counterproductive. We identified four primary concerns associated with university–community college competition. These are:

- competition for students;
- competition for faculty and other limited resources;
- allocation of state funding; and
- damage to existing university–community college partnerships.

## Competition for Students

Competition for students is one of the biggest concerns expressed by universities both inside and outside of Texas. Given the lower cost and closer proximity of community colleges to their student populations, stakeholders at universities fear that students who otherwise would have attended universities will instead choose comparable programs at community colleges. In the case of applied science programs, interviewees from research universities reported that their students are so distinct from community college students that they have little concern about competition. Nevertheless, interviewees at regional universities that have prioritized the development of applied science baccalaureate programs to meet employer needs were extremely concerned about this potential competition, as were those at feeder community colleges.

In the case of nursing, university interviewees contended that the market has already been saturated with RN-to-BSN and generic BSN programs and that there is no room for additional providers. Those at universities and health science centers with RN-to-BSN programs reported additional capacity in both online and face-to-face programs. Institutions that do not offer lower-division coursework were especially concerned about community college expansion into RN-to-BSN programs because their nursing programs rely on community colleges for students.

Concerns over competition for students largely center on the premise that prospective baccalaureate students are a relatively fixed pool of individuals and that community college programs simply will redirect students from one type of institution to another. This view does not account for the likelihood that offering baccalaureate degrees at community colleges will expand access for students who might otherwise not pursue a bachelor's degree. Stakeholders in Florida and Washington noted that they are committed to monitoring whether students enrolled in community college baccalaureate programs are distinct from those who would have enrolled in traditional universities. In Washington, students who enroll in community college baccalaureate programs are significantly more likely to be older, working, low-income, and minority (Washington State Board for Community and Technical Colleges, 2013). Stakeholders from Florida did report increasing concerns that community college baccalaureate programs in education—a traditional university offering—are causing students to remain at community colleges instead of transferring to universities to complete their bachelor's degrees.

Several community colleges expressed the view that universities would not face increased competition for students in Texas.

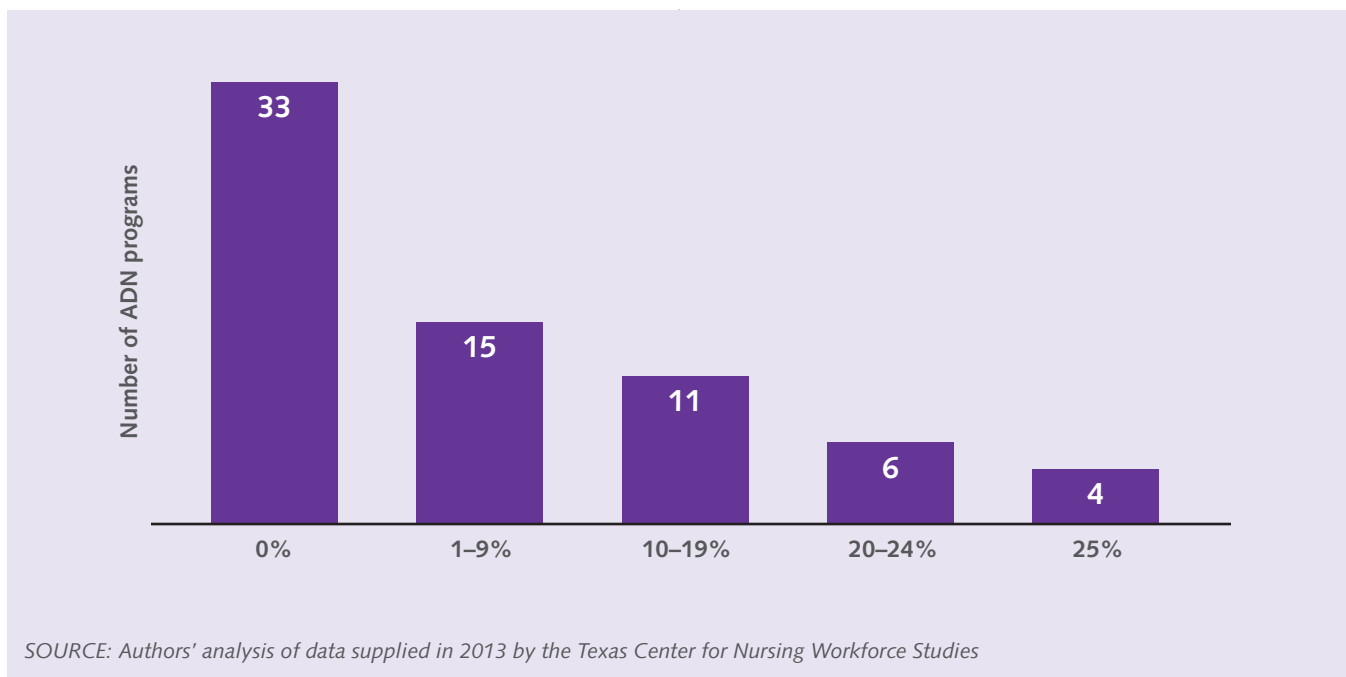
## Competition for Faculty and Other Limited Resources

Employers, community colleges, universities, and state policymakers all reported concern about competition for faculty in BSN programs. Many said that limited numbers of nursing faculty was the major barrier to nursing program expansion and that adding institutions would only worsen the shortages. National efforts to expand Doctor of Nursing Practice (DNP) programs increased the number of such programs by four percent and the number of students in these programs 27 percent between 2011–12 and 2012–13 (AACN, 2014a). Nevertheless, shortages of faculty with terminal degrees are likely to continue over the next decade. University and community college interviewees noted the high salaries that terminally degreed nurses are offered outside of higher education, and several chief nursing officers we interviewed described the low salaries offered by many nursing programs as “offensive.” The state helps supplement the pay of nursing faculty, but stakeholders reported significant continued challenges in staffing nursing programs.

To be accredited at the bachelor's level, colleges must ensure that 25 percent of the faculty members teaching upper-division courses have a DNP or a PhD in nursing. Texas already has considerable difficulties meeting this target; our analysis of data supplied by the Texas Center for Nursing Workforce Studies shows that only nine percent of faculty in existing ADN programs had doctorates, and nearly half of ADN programs lacked a single faculty member with a doctorate (see Figure 6.2). Only four institutions currently meet the 25 percent threshold: Brazosport College, Brookhaven and Mountain View Colleges from the Dallas Community College District, and Wharton County Junior College. Many community college interviewees said that they would “grow their own” faculty rather than try to draw from an existing pool. Several also noted that some faculty members are pursuing graduate degrees in nursing.

University interviewees reported that their institutions would have a distinct advantage over community colleges in paying faculty and offering favorable working conditions. At the same time, one university interviewee argued that community colleges' abilities to attract community and industry resources give them an advantage in raising funds for programs. While universities have an advantage over community colleges in hiring nursing faculty, expanding the capacity of programs would put additional strain on the faculty pool, regardless of the institutions in which the programs are expanded. Community college interviewees noted that they can help

**Figure 6.2.** Number of Associate Degree Nursing Programs in Texas by Percentage of Faculty with Doctorate Degrees, 2012



provide more BSNs to increase the pipeline for terminally-degreed nurses.

Finding faculty is less of a constraint in RN-to-BSN programs than it is in ADN and generic BSN programs. The Board of Nursing oversees prelicensure programs, so ADN and generic BSN programs must meet additional standards that RN-to-BSN programs need not meet. For example, the Board of Nursing requires a student-to-faculty ratio of 24 to 1 in prelicensure degree programs.<sup>9</sup> Programs with lower student-to-faculty ratios will require more faculty for a given number of students and will likely face greater challenges in meeting the 25 percent threshold for terminally degreed faculty. Interestingly, stakeholders in Washington and Florida did not report similar concerns about nursing faculty. State oversight bodies and regional accreditors may have different standards for faculty credentials, and differences in the level of concern may be partially explained by different requirements.

Interviewees reported that competition for faculty is a concern not only in nursing programs but also in the applied sciences. In some programs, such as those in technical fields and in fire sciences management, there are very few individuals with terminal degrees. There are a substantial number of terminally degreed individuals in computer-related fields, but whether these highly trained computer scientists are interested in or

prepared for teaching in applied programs in the field is in doubt. Like nurses, these individuals draw large private-sector salaries, making them very expensive and difficult to recruit for faculty positions.

Faculty concerns dominated discussions about competition for resources, but concern about clinical spaces—an issue specific to nursing—also received considerable attention. The market for such spaces is becoming more competitive. Institutions with nursing programs reported that other institutions are increasingly entering their regions to compete for spaces at the same hospitals. Such interviewees also noted a growing need to seek clinical spaces outside of hospitals. Still, demand for clinical spaces arising from RN-to-BSN programs is smaller than that from ADN and BSN programs. Most clinical requirements are prelicensure, so RNs from community colleges require relatively little additional clinical time to achieve the BSN. RNs from community colleges may also complete requirements at their own hospital or place of work.

Concern about clinical spaces was most severe among community college ADN programs. Hospitals in Houston and DFW are unwilling to give clinical placements or jobs to ADN students because they are pursuing the 80 percent BSN target that is required for magnet status. Community college interviewees claim that being able to offer BSN programs

<sup>9</sup> Ratios vary for different components of a program, with a 24:1 ratio for basic coursework. See Texas Board of Nursing, 2013.

would enhance the possibilities for clinical placements. Nevertheless, one DFW community college interviewee pointed out that issues surrounding clinical slots lessened after the college built strong articulation agreements with university BSN programs and was able to demonstrate that its ADN students were already enrolled in BSN programs.

## Allocation of State Funding

One of the most commonly cited concerns among university interviewees about expanding community college baccalaureate programs was that fixed state resources would be split among more institutions. A decrease in funding per institution might affect the quality of all or force students to bear higher costs. We explore the current allocation of state funding in Chapter 7.

Stakeholders from both community colleges and universities in Texas agreed that funding is becoming less adequate. They note that increased efforts, whether by universities or community colleges, to meet workforce needs will require additional resources. Some institutions suggested that specific fields, such as nursing, may require additional funding to meet workforce needs.

**Most community college interviewees reported that baccalaureate expansion makes sense only when partnerships with universities are not meeting student or workforce needs.**



## Damage to Existing University–Community College Partnerships

Interviewees at universities expressed fear that expanding baccalaureate programs to community colleges could damage existing partnerships and undermine recent progress in them. These interviewees said the partnerships are particularly important to institutions that do not offer relevant lower-division courses and therefore rely on community colleges to feed their student population. Interviewees at nearly half the community colleges we visited reported that partnerships were working well for them and enabling them to meet workforce needs. These colleges may forgo establishing their own baccalaureate programs rather than jeopardize these partnerships. Most community college interviewees reported that baccalaureate expansion makes sense only when partnerships with universities are not meeting student or workforce needs.

Community college baccalaureate programs have had varying effects on relationships with universities in Washington and Florida (Floyd, 2006; Floyd and Walker, 2008). In Washington, stakeholders reported little conflict between universities and community colleges over baccalaureate expansion. The institutions work collaboratively to vet programs and ensure that there is no duplication. The differentiation of degree titles helps to ensure some delineation between programs. There is some concern that community colleges will eventually move into academic areas traditionally reserved for universities, but, in general, partnerships are continuing to function well. In Florida, interviewees at community colleges and universities reported some tension. Universities did not feel that they have a say in the establishment of new baccalaureate programs, and many community colleges have moved aggressively to expand their own program offerings rather than establishing partnerships. For example, St. Petersburg College, Florida's first public two-year college to offer the baccalaureate, currently offers 27 baccalaureate programs in areas ranging from natural science to business (St. Petersburg College, 2012). Universities are particularly worried about baccalaureate programs in education, with more students seeking such degrees through community college programs rather than through partnerships with universities.



# A Decline in the Overall Quality of the Texas Baccalaureate

University stakeholders expressed fear that community colleges are not well equipped to provide high-quality baccalaureate programs. Several stakeholders suggested that community colleges should “let us do what we do best, and let them focus on what they do best,” implying that universities are better at providing baccalaureate programs. Many community college stakeholders suggest “what they do best” is prepare students for the workforce and that applied baccalaureates, with a workforce preparation component, are distinct from academic baccalaureate degrees.

Community college representatives argue that their programs often are of equal or better quality than university programs. In nursing, for example, many community college interviewees, as well as state-level stakeholders and employers, point to higher average scores on the National Council Licensure Examination for Registered Nurses as evidence of the quality of their programs. Several associate-level programs at community colleges have national accreditation, and some programs are recognized as centers of excellence in certain fields—suggesting they would be able to develop related baccalaureate programs of similar quality.

Evidence on the relative quality of community college and university baccalaureate programs is limited. Often, student growth in KSAs is not assessed upon graduation from baccalaureate programs, and there are few objective measures of that growth.<sup>10</sup> Recent data from Florida suggest that, compared with university students, community college baccalaureate graduates are more likely to be employed and to earn higher salaries than university graduates (Schneider, 2014). Community college baccalaureate students also are likely to enter programs with higher employment rates and higher incoming salaries, as these students often are older and choose to enter a program midway through their career. Whether these employment outcomes can be attributed to the quality of community college programs or to differences among enrollees is unclear. The THECB (2010b) notes pilot programs have been meeting employer needs: “Employers are very satisfied with the performance of graduates and . . . the community and workforce advisory boards associated with

each program were enthusiastic supporters of the program and being used effectively by the institutions.” Our interviews also found that employers thought that these programs contribute substantially to workforce development.

To be sure, there are clear differences in the environments and resources of universities and community colleges. If community colleges are lacking in certain areas that are essential to baccalaureate education, then quality becomes an issue. We identified three key primary concerns associated with the ability of community colleges to produce degrees of equivalent value to those offered at universities. These are:

- the need for a research-based, liberal arts education;
- additional resources needed to meet accreditation standards; and
- issues associated with acceptance in the workforce and graduate programs.

## The Need for a Research-Based, Liberal Arts Education

Many university interviewees, particularly those at institutions known for research, note that a baccalaureate education includes more than advanced training in a particular area. These interviewees cited the substantial value of the traditional liberal arts education in building critical thinking skills, research capabilities, and general skills such as reading and writing. Several interviewees argued that the theoretical content of university degree programs is a critical aspect of a baccalaureate program and that the applied nature of community college programs does not suit a baccalaureate education. Others argued that the value of a baccalaureate degree is in its broad, high-level training that enables students to move across a range of occupations and industries, expanding career opportunities and increasing their resiliency to changes in the economy. These interviewees believed that universities are uniquely equipped to provide this type of education because of their investment in research, the quality and orientation of their faculty, and students who are focused

<sup>10</sup> Some Texas universities have used the Collegiate Learning Assessment, a test that can assess learning among college students and college graduates. However, these measures have not been used to compare outcomes of students in baccalaureate programs at community colleges versus universities.

on baccalaureate-level education. On the other hand, the exposure of undergraduates to research may be limited at some universities, as well.

The state's recent expansion of applied baccalaureates indicates that there is some support for applied and more narrowly focused training. The multidisciplinary BAAS still looks relatively similar to the traditional baccalaureate, but many universities might argue that the BAS and BAT cannot provide the level of liberal arts education at universities. This view is not universally held, as several regional colleges offer a range of BAS or BAT programs as well as the multidisciplinary BAAS. In the applied sciences, although some employers expressed a need for skills associated with liberal arts education, including critical thinking, communications, and writing, most employers were looking for specific, applied skills. The state must balance workforce need with the other values stakeholders emphasize in a baccalaureate-level education, regardless of which type of institution is providing these programs.

Stakeholders were especially likely to mention concerns about the ability of community colleges to offer "true" baccalaureate education in nursing. At least one employer argued that, in her experience, "an ADN plus an RN-to-BSN does not equal a real BSN." Universities, some employers, and several nursing experts felt that ADN programs are largely task-oriented and not taught in a way that builds critical thinking, evidence-based decisionmaking, and leadership—competencies viewed as essential in BSN nurses. These stakeholders fear community college baccalaureate programs might have a similarly limited focus. Several university stakeholders described a required transitional course, recommended by the Tri-Council for

**Many university interviewees noted that a baccalaureate education involves broad, high-level training that enables students to move across a range of occupations and increase their resiliency to changes in the economy. They argued that universities are uniquely equipped to provide this type of learning experience, whereas community college programs, with their emphasis on advanced training in a particular area, do not suit baccalaureate education.**

Nursing (AACN, n.d.), to help ADN nursing students reframe thinking about nursing and education as they begin an RN-to-BSN program. Nevertheless, some community college interviewees suggest that the differences between ADN and BSN programs are narrowing. Some ADN programs are moving to concepts-based curricula, which may be more aligned with BSN curricula and their outcomes.

Although accreditation has not presented significant obstacles for community colleges to date, there is a potential concern on the horizon. Over the past two years, SACS-COC staff and higher education stakeholders have discussed concerns that the applied baccalaureate degrees are granting credit for technical lower-division courses that may not meet the standards expected of baccalaureate education. This concern is greatest in programs that offer block credit for a full technical associate degree without review of the individual courses, a practice that many stakeholders said is valuable for smoothing these students' transitions. While the concern applies equally to both universities and community colleges with applied baccalaureate programs, community colleges may attract more scrutiny because they will undergo an accreditation review in order to offer their first baccalaureate.

## **Additional Resources Needed to Meet Accreditation Standards**

Baccalaureate-granting institutions must fulfill many standards—including those for sufficient library resources, highly trained faculty, sufficient administrative structures, and appropriate facilities—set by regional accrediting bodies. Interviewees at two community colleges currently providing baccalaureate degrees reported that it took nearly two years and substantial investments to meet accreditation standards, with investments largely devoted to upgrading library resources. Beyond initial startup costs, there are ongoing costs associated with faculty and other resources that must be accounted in program planning. Interviewees at many universities, as well as at some smaller community colleges, suggest that many community colleges do not have the resources to expand into baccalaureate-level education. Nevertheless, a number of community colleges that had considered these costs and are well aware of the expense are confident in their ability to provide high-quality education. Several community colleges proudly showed off new simulation facilities and touted their strong financial standing as evidence that they are well equipped to support baccalaureate programs.

Evidence from other states suggests that community colleges have the resources needed to meet accreditation standards for baccalaureate programs. Our discussions with state-level stakeholders and a representative of an accreditation agency suggest that community colleges in Florida and Washington have had little difficulty in becoming baccalaureate-granting institutions.

## Issues Associated with Acceptance in the Workforce and Graduate Programs

University stakeholders expressed concern that employers and graduate programs will view community college baccalaureate programs differently. Interviewees at a small number of universities argued that community college baccalaureate graduates may have a more difficult time finding employment—contradicting some data findings noted above (Schneider, 2014; THECB, 2010b). In addition, 23 of the 25 employers we interviewed reported no preference

for university graduates over community college graduates. Most employers reported that individual qualities, the level of the degree, and (in many cases) experience is far more important in hiring than the type of college attended. Most employers also reported strong positive feeling about their local community colleges and said that they would definitely hire graduates if a baccalaureate program were developed.

In Florida, graduates of some community college baccalaureate programs have been unable to continue on to graduate education because of a lack of accreditation for programs, and several stakeholders identified this as a downside of community college baccalaureate provision. Yet we find no other evidence that community college baccalaureate graduates, and applied baccalaureate graduates more generally, are not welcome in graduate education. We heard anecdotal accounts of graduates from applied baccalaureate programs at several institutions—including community colleges—being very successful in graduate programs.

## Summary

Although the expansion of baccalaureate programs at community colleges offers potential benefits, it also raises concerns, including some concerns shared by stakeholders of all types. Mission creep was the most commonly cited concern, though there is mixed evidence for this. Additional research and monitoring are needed to determine whether, in the long term, mission creep will lead to problems for higher education in Texas. Expansion of community college baccalaureate programs does not appear to have greatly affected tuition rates. Community colleges are unlikely to retain open-enrollment policies for baccalaureate programs, but this may not be related to mission creep as much as to higher standards necessary to ensure that students are prepared for baccalaureate-level education.

Another major concern shared by both universities and community colleges centers on excessive and counterproductive competition. Many community colleges and universities presently are partnering to offer multiple pathways to the bachelor's degree. If new baccalaureate programs at community colleges duplicate or overlap university offerings, these partnerships could be damaged,

and institutions could be competing for students, faculty, and state funding. The degree of competition is likely to vary substantially by field and region.

Universities raised concerns about the potential negative effect of community college programs on the quality of baccalaureate programs in Texas. For occupations that demand KSAs associated with a broad liberal arts education, community colleges may not be well equipped to match the quality of universities, but community colleges may have an advantage over universities in occupations that demand applied skills. All stakeholders should understand that building baccalaureate programs at community colleges requires significant resources, which may present challenges in certain fields and in community colleges that do not already have strong resources in place.

# 7 Other Provision Options, Costs, and Funding

Texas has a number of options for meeting workforce needs besides community college baccalaureates. We review these below, then present the available information on the costs of community college baccalaureate programs, the current funding arrangements for these programs, and options for future funding.

## Other Provision Options

The previous two chapters have focused on the potential to meet unmet workforce needs through community college baccalaureate expansion, but there are clearly other options, such as developing partnerships, starting or expanding university programs, and extending learning opportunities through which individuals are able to receive educational credit for learning that has occurred outside the classroom.<sup>11</sup> Each of these approaches to meeting workforce needs was raised by stakeholders from more than one institution, and all of them are currently in use in Texas. We explore each approach below.

### Partnerships

Most interviewees agreed that there has been substantial progress in strengthening partnerships between universities and community colleges in recent years. Articulation agreements are expanding rapidly, allowing associate-level graduates to move more seamlessly into universities. Many university nursing programs now provide automatic admission to qualified students from partner community college programs. Several ADN nursing programs have established relationships with universities that allow students to be enrolled simultaneously in a BSN program, increasing both students' and employers' confidence that students will

<sup>11</sup> There also are many programs and initiatives within Texas to improve retention and completion rates of enrollees, but these were outside the scope of this study.

move on to a baccalaureate program. Community college respondents reported that these types of relationships help ease issues with clinical placements for ADN students.<sup>12</sup>

In the applied sciences, many Texas universities have relaxed policies related to the acceptance of technical credits in an effort to open pathways for technical students and smooth the articulation process. A number of institutions allow students to use work experience as part of the credit leading up to a BAAS degree. Two Texas institutions—South Texas College and Texas A&M Commerce—received permission from accrediting agencies in December 2013 to offer separate competency-based degree programs in organizational management that may allow many students to complete a degree in less time for substantially less money. These additional pathways open access to baccalaureate degrees for a wider pool of students. They also help to meet the needs of employers who seek candidates with advanced training in a technical area or in management and business.

Although stakeholders generally agreed that articulation agreements are improving and providing additional educational opportunities for students, there is still work to be done. Interviewees at several community colleges mentioned that negotiating articulation agreements and memoranda of understanding can be time-consuming, and having separate agreements with each university can make program planning and curriculum development complicated because of widely differing requirements and standards among partner institutions. Texas is pursuing ways to simplify articulation to address some of these concerns. For example, in November 2009, Texas was one of seven states to receive a four-year grant from the Lumina Foundation for “tuning,” that is, defining and standardizing learning expectations to ensure greater alignment across programs and institutions. The alignment of programs facilitates easier articulation for transferring students. This process will be applied to 16 academic disciplines, beginning with engineering. Stakeholders at several institutions mentioned that this tuning has been extremely valuable in facilitating seamless transitions, and that it would be useful in such fields as computer information technology.

In nursing, a two-year, \$300,000 APIN grant is supporting efforts to improve partnerships between community colleges and universities. The Robert Wood Johnson Foundation, in partnership with the Tri-Council for Nursing, provides these

grants to support movement toward the goal of having 80 percent of nurses baccalaureate-degreed by 2020. The state developed the Consortium to Advance Baccalaureate Nursing Education in Texas, a model to increase the production of RN-to-BSN programs in the state. In partnership with the Texas Team coalition, the consortium supports institutions that are creating programs for seamless progression. The APIN grant is also supporting efforts to move toward concept-based education, where students learn about nursing according to general concepts, rather than the traditional focus on task-based curricula. This effort aims to enhance critical thinking skills and to provide nurses with greater flexibility in dealing with increasingly complex work in healthcare settings. In fall 2013, six Texas community colleges implemented these new curricula. In addition, some RN-to-BSN programs, such as the program at UT–Arlington, have agreements with partner community colleges that allow students to complete the full degree program in just 10 months.

**It is critical to retain and continuously improve university–community college partnerships, regardless of whether baccalaureate programs at community colleges are expanded.**

Stakeholders at some institutions, particularly the universities, were concerned that community college baccalaureate expansion may undermine these efforts by creating a competitive environment and reducing incentives for cooperation. At the same time, some community colleges reported that these efforts would not negatively affect partnerships because they would pursue baccalaureate programs only where existing pathways were not meeting needs. Some argued that these efforts are indeed very complementary to community college baccalaureate expansion. For example, the standardization and alignment of curricula can help increase consistency in the content and quality of programs across institutions of different types. One area of agreement across all institutions is that it is critical to retain and continuously improve university–community college partnerships, regardless of whether baccalaureate programs at community colleges are expanded.

<sup>12</sup> For more information, see the Future of Nursing: Campaign for Action, n.d.

## Starting or Expanding University Programs

A number of the universities we visited mentioned their own efforts to expand or develop programs to meet workforce needs. All universities with nursing programs desire to expand them, though, as noted, faculty shortages may limit their ability to do so. In the applied sciences, Table 2.2 indicates that there are a number of universities that produced more than 100 baccalaureates in 2013, with University of North Texas graduating more than 400 BAAS students. At the same time, seven universities had applied science degree programs graduating fewer than 20 students.

Community college stakeholders suggested that while some universities are providing applied degree programs, there are many regions and fields in which these programs are not meeting the needs of the state. They argue that university BAAS programs are not broadly advertised or marketed to students and that universities view these programs as offering a less meaningful degree or an easier pathway for high-risk students. According to some stakeholders, the lack of emphasis on these programs prevents them from being accessible pathways for students. This concern was borne out by our visits to several universities where institutional leadership and departmental staff were not aware that a program existed, questioned the value of the program, or could not readily describe either the specifics of the program or why a student would choose to enroll in it. It is unclear whether these small enrollment numbers are the result of limited student demand or lack of support and marketing efforts. We also visited several universities that strongly

support their applied science baccalaureate programs, graduate large numbers of students, and view the programs as an important area of focus.

## Extending Learning Opportunities

Alongside efforts to smooth articulation and align curricula, universities and community colleges also are eliminating distance as a barrier to access. We heard from stakeholders at several institutions that, to bring degrees to students, universities sometimes offer courses and even full programs on community college campuses. In some cases, universities and community colleges have developed academic centers where students can access resources from several institutions. For example, the Collin Higher Education Center allows students to enroll in programs in Collin County offered by university partners, including Texas A&M University–Commerce, Texas Woman’s University, The University of Texas at Dallas, and University of North Texas.<sup>13</sup>

Distance learning opportunities also are rapidly expanding across the state. Nearly every institution offers hybrid learning opportunities, and many offer full degree programs online. Applied baccalaureate programs and RN-to-BSN programs are particularly likely to be offered entirely online in an effort to meet the needs of working students, who are more likely to be enrolled in these programs. These opportunities have made baccalaureate-level education much more accessible to place-bound individuals who live in an area with insufficient face-to-face learning options. Most stakeholders with whom we discussed distance learning, however, acknowledged it is not a substitute for face-to-face programs.

# The Cost and Funding of Community College Baccalaureate Programs

Many stakeholders expressed concern about the cost of pursuing various options for expansion. Stakeholders at both community colleges and universities argued that the state should expand baccalaureate programs in the way that is least costly. Yet there was substantial disagreement about the relative cost of different expansion possibilities.

University respondents believe it would be much less costly to expand their existing programs or, in the case of

underenrolled programs, to channel students into programs that already exist. They argue that community colleges would experience substantial costs up front for accreditation, and recruiting terminally degreed faculty would be a particularly large expense over time. Where a community college baccalaureate program would lead to duplication, competition for faculty and students would increase costs for all institutions.

<sup>13</sup> Description of Collin Higher Education Center at [www.collin.edu/chec](http://www.collin.edu/chec).

Community college interviewees, by contrast, cited their substantially lower operating costs as providing a cheaper alternative both to the student and to the state. They noted their institutions already meet most requirements for accreditation, so the cost to initiate baccalaureate programs would be small. They also noted that they have better facilities for the applied sciences and nursing programs than nearby universities.

## Startup Costs

At several of the pilot community colleges, we learned that there were substantial costs involved in building up programs and meeting accreditation standards. SACS-COC requires that a college moving to offer the baccalaureate degree must undergo a “substantive change process” to become a Level II institution. This entails meeting higher standards for a variety of resources. Institutions must provide a full description of the program content, including curricula and learning objectives; evidence of sufficient library resources, equipment, and facilities; evidence of sufficient administrative structures and student support; a roster of sufficiently trained faculty; and a clear business and financial plan to ensure that the program will be sustainable.

Community college representatives in Texas and Washington told us that this takes approximately two years and requires investments of \$250,000 to \$500,000 in infrastructure across the institution and an additional similar amount in program-specific startup costs for each new program. Adding more baccalaureate programs is likely to be less costly with the addition of each successive program because the institution will not have to repeat the process of upgrading its accreditation.

For the pilot baccalaureate programs at the Texas community colleges, startup costs were offset by a special legislative appropriation of \$1.2 million to each college. To understand startup and operating costs better, we reviewed financial records supplied by two of the three pilot colleges. These records indicate that the colleges were able to cover their startup costs for both institutional and program expenditures with the legislative appropriation. This review lends support to a rough estimate of \$1 million in startup costs for a community college developing its first baccalaureate program.

The magnitude of startup costs depends on the existing capacity of the institution. Many community colleges have large numbers of terminally degreed faculty and high-quality facilities and resources that will require few upgrades. These institutions would likely experience lower startup costs than institutions without these resources.

## Operating Costs and Revenue

Community colleges that offer baccalaureate degrees typically charge higher tuition for upper-division courses. For example, during the 2013–14 academic year, Brazosport College charged an additional \$60 per credit hour for upper-division courses, on top of the \$76.50 cost per credit hour for lower-division courses, for students within its taxing district. Texas students outside the district pay an additional \$34 per credit. An in-district student taking a full-year load of 30 upper-division semester-hour credits at Brazosport would therefore pay \$4,095, nearly double the \$2,295 that a lower-division student would pay for a year of enrollment. Still, the Brazosport student would pay only one-half to two-thirds of the tuition at a state university, which averages \$7,650 (College for All Texans, n.d.).

The three pilot community colleges have been receiving state reimbursement at the same rate as universities: currently about \$80 per semester credit hour. This upper-division funding rate is substantially higher than the state reimbursement rates for lower-division courses at community colleges, which average about \$5 per semester credit hour.<sup>14</sup> Our review of the two colleges’ financial records indicates that these colleges have generally been able to cover their annual operating costs from student tuition and state reimbursement after the initial startup period of two to three years (when the deficit was covered by startup funding). The financial records we reviewed did not include indirect allocations for general college administration or facilities costs, so there may be additional costs that need to be funded from local tax revenue. One example of such indirect costs occurred several years after beginning baccalaureate programs, when one of the community colleges built specific facilities to house upper-division education. Funded by the college’s local tax base, the facilities reportedly cost \$2.6 million. This investment suggests that community colleges will have indirect costs as they expand baccalaureate programs, which may not be covered fully by student tuition and state reimbursement.

<sup>14</sup> The state covers approximately 13 percent of all costs at community colleges in Texas, with most of the remainder coming from student tuition and local funding.

## The Need to Account for Total Costs

Without a complete accounting of indirect costs, it is not possible to compare the total operating costs at the pilot community colleges with state universities. We expect that operating costs are likely to be higher for upper-division than for lower-division courses because more highly educated faculty may be required to teach the upper-division courses. Conducting a cost study was beyond the scope of this project, but it would be extremely helpful to obtain more objective evidence on the overall costs of several approaches to expanding baccalaureate programs. The costs are likely to vary substantially by program and institution, but it would be beneficial to estimate the average costs and describe variation. Costs, of course, should also be considered along with program quality and student access.

**Community colleges that offer baccalaureate degrees have generally been able to cover their annual operating costs from student tuition and state reimbursement after the initial startup period of two to three years.**

Applied baccalaureate students pay tuition that exceeds that for an associate program but is still less than that for a university. Graduates of these programs, and of similar programs in other states, have high employment rates, and community college interviewees reported that these students often received promotions and salary increases. This suggests that graduates may be able to recoup the costs of programs. In addition, some community college interviewees reported that employers often pay for these programs. The fact that employers are willing to do so suggests their belief that the education has value.

## The Need for Business Plans

If Texas pursues community college baccalaureate expansion, community colleges must ensure they have viable business plans. The enrollment or capacity of many BAT programs is relatively small, so the programs must avoid being too costly to develop. Many stakeholders argued that nursing programs also are notoriously expensive, given the premiums that must be

paid to faculty and the need to provide top facilities. RN-to-BSN programs in many cases, however, may be substantially less costly than generic BSN programs because they do not have student-to-faculty ratio requirements (unless programs pursue national accreditation), and the coursework for postlicensure programs does not require use of costly facilities.

## Funding Approaches

It is also important to consider who will pay the costs. Many community colleges argued that community college baccalaureate programs will benefit the state because they are, in most cases, less costly to the state. If funding rates remain equivalent, though, there would be no per-student cost savings to the state. While state funding rates per credit hour are the same for baccalaureate programs at community colleges and universities, the state pays a substantially larger portion of university costs for infrastructure and operation. Some university stakeholders hypothesized that lower fixed costs to the state may have been the impetus for community college expansion. Community colleges likely would cover the costs of infrastructure and other capacity-building efforts through local funding, making these programs more costly to the local community. If current funding arrangements persist, we expect that students will face lower prices at community colleges. If the state reimbursement rate is reduced, community colleges likely will raise student tuition, offsetting their price advantage.

Other states have adopted somewhat different pricing and funding approaches. In Florida, stakeholders reported that tuition for community college baccalaureate programs must be less than two-thirds of public university rates, so as to promote access. Washington provides all state funding to community colleges through block grants and chose not to increase state funding for their baccalaureate programs. It requires community colleges to charge upper-division tuition rates for baccalaureate programs that are roughly equivalent to public universities. One key stakeholder in Washington reported that this equivalent cost structure was designed to address concerns about price competition between community colleges and universities. Interviews with representatives of Washington community colleges indicated that the colleges have found the tuition revenue sufficient to cover the annual operating costs of their baccalaureate programs. As in Texas, Washington colleges also may use local funding to cover expenses if student tuition is insufficient.



# Summary

In addition to considering the benefits and concerns associated with community college baccalaureate programs, decisionmakers must weigh other considerations on how best to meet workforce needs. In this chapter, we considered existing ways of meeting workforce needs, costs, and funding.

Many universities and community colleges are currently partnering to improve students' access to bachelor's degrees by establishing articulation agreements and simultaneous enrollment programs and by teaching university upper-division courses at community colleges campuses or regional higher education centers. Stakeholders believed it to be vital that any policy not undermine these partnership efforts.

Stakeholders disagreed on the relative costs of options. Both community colleges and universities claim advantages in some situations.

Financial records from two Texas community colleges with experience offering bachelor's degrees indicate that these colleges have been able to cover their identified operating costs from tuition revenue and state reimbursement. The colleges did experience significant startup costs to meet accreditation requirements, as well as normal program startup

costs until a full complement of students enrolled. Special state funding of \$1.2 million to each appears to have covered these costs. Startup costs for future programs are expected to be lower at these colleges because there will be low (or no) institutional costs.

While community colleges have set upper-division tuition above the lower-division rate, it remains one-half to two-thirds of state university tuition, so these colleges have been more affordable for students. To date, community colleges have been receiving the same state reimbursement for upper-division courses that universities receive. If the state lowers reimbursement rates in the future, students or local taxpayers could face increased costs.

Our analysis did not examine the indirect costs for facilities and central administration that growing baccalaureate programs may require (and indeed, at least one college has built specific facilities with local funding). More detailed analysis of the full costs of expansion, including these indirect costs, is needed to ensure that expansion of baccalaureate programs occurs at the institutions where workforce needs can be met most effectively.



# 8 Policy Options for Community College Baccalaureate Expansion

Texas has several policy options available as it weighs community college baccalaureate expansion. We describe six guiding principles for policy decisions, identify a range of policy options, and describe how the policies might affect the costs and benefits associated with expansion.

## Guiding Principles for Policy Decisions

Although there was substantial disagreement among stakeholders about the best path forward for Texas, some common themes emerged from our study. We distill these into six principles that the state should consider when making decisions about community college baccalaureate programs.

**1. Meeting unmet workforce needs should be a priority.** Employers and institutional stakeholders placed the greatest emphasis on meeting unmet workforce needs as the primary rationale for expansion and suggested that this should be given more weight than competition, cost, or other considerations. Institutions have a variety of tools to assess unmet workforce needs, but they may benefit from additional guidance about the evidence required to demonstrate a level of unmet workforce need that would justify a new program. Our analysis of unmet need in five occupations (Chapter 4), while not comprehensive, describes the types of evidence to consider.

**2. The state and students should realize some benefits from any new program.** Developing new degree programs can be costly. Such programs should provide benefits to various stakeholders—not only employers but also the state and students. Too many programs in one field may create oversupply, which, while good for employers, is costly to the state and disadvantageous to students should it depress wages. The state has other aims as well, such as assuring access to quality higher education. Expanding community college baccalaureate programs may increase access and, in some cases, the quality of education that students receive.

**3. Any policies limiting the scope of community college baccalaureates should seek to address concerns such as mission creep and duplication of efforts without unnecessarily limiting benefits such as access to expanded programs.** Stakeholders

at universities and several community colleges voiced significant concerns about the effects of community college baccalaureate expansion on Texas' higher education system. Such effects may include mission creep, counterproductive competition, and declines in educational quality. The evidence supporting these concerns, however, is limited and often inconclusive. While policies can be developed to minimize many of these concerns, policies that limit concerns can simultaneously limit benefits. It will be most productive for the state to link any adopted limits to a clear rationale and subject them to review when more evidence becomes available on the associated concerns.

**4. Policies should complement and promote other investments, particularly university–community college partnerships.** We described a number of ongoing efforts to improve university–community college partnerships and otherwise expand baccalaureate-level education to meet workforce needs. Partnerships were one of the most commonly raised topics in stakeholder interviews, and, in every discussion, institutions reported that partnerships create opportunities for students and help meet workforce needs. Although some community college stakeholders reported that partnerships fall short and that other strategies are necessary, others reported that partnerships are meeting most, or all, of their needs. Regardless of whether community college baccalaureate programs expand, partnerships can play a valuable and complementary role. The state should consider these

other efforts in developing new policies. It also should ensure that new policies do not undermine these prior and ongoing investments that are meeting student and workforce needs.

**5. Decisions about policy should consider costs.**

**Most** stakeholders argued that proposals to meet workforce needs should be evaluated partially on costs. Stakeholders had different perceptions of cost, with those at universities arguing that community college programs would be more expensive because of their substantial startup costs and higher operating costs. Texas must consider the effects of policy decisions on the cost to the state, local communities, and students. The limited evidence we reviewed does not clearly indicate whether community colleges or universities have cost advantages, so more detailed studies of costs will be important to the decisionmaking process.

**6. Policies should be fair and transparent.**

Stakeholders disagreed strongly about whether the state should authorize community college baccalaureate expansion, but all agreed that, if expansion occurs, associated policies and processes should be fair and transparent. For example, if degrees are limited to the applied sciences, there should be a clear definition of applied sciences on which all stakeholders agree. Stakeholders generally felt that the state should make a clear policy decision about expansion, describe the associated policies and procedures, and let the institutions develop programs in accordance with the policies and procedures.

## Policy Options

In our view, Texas has three policy options to consider, relating to the expansion of baccalaureate-degree offerings at community colleges:

- Make no significant policy changes.
- Authorize community college baccalaureate expansion without special restrictions.
- Authorize community college baccalaureate expansion with restrictions.

Community college and university interviewees had quite different views of the best option for the state. Community college interviewees felt that the SACS-COC accreditation process and THECB program approval processes suffice

to ensure that institutions are equipped to provide high-quality baccalaureate programs. They generally did not feel that additional requirements were necessary to ensure that programs are of sufficient quality and that they benefit the state. Community college interviewees also expressed little interest in providing academic baccalaureate degrees at their colleges, with those at half of the community colleges reporting that their institution was unlikely to be interested in offering any baccalaureate degrees.

Most university respondents did not support community college baccalaureate expansion in Texas. Should the state undertake it, however, they said there should be clear limits on program offerings, and community colleges should

potentially be subject to additional quality monitoring. All of the institutional leadership at universities argued that baccalaureate nursing programs should not be permitted at community colleges; opinions were mixed among department-level staff. University leaders expressed somewhat less opposition to expanding applied science programs at community colleges, and a few admitted that community college programs might help meet unmet needs. However, most felt that their universities already were recognizing the need for new training programs in the applied sciences and were moving to improve access to such programs for technical students from community colleges.

## Make No Significant Policy Changes

The first option available to the state is to make no change to current policy and not to expand community college baccalaureate programs but to continue supporting only those that have been authorized. Choosing this policy likely would limit the state's ability to meet workforce needs in applied occupations, but the state could continue to expand university–community college partnerships and university capacity more generally. The ability to meet workforce needs may be particularly limited in areas where the state lacks universities and where universities are not interested in developing applied baccalaureate programs. The status quo also is unlikely to provide the same level of access that community college baccalaureate expansion could afford. Some community colleges might argue that valuable capacity would be left unused if they are unable to provide baccalaureate programs and that the state is missing the benefits their programs could provide at a relatively low cost. In addition, if public options are unavailable to meet the needs of students and employers, private providers, including for-profit institutions, may well fill the gaps at higher cost and perhaps lower quality.

## Authorize Community College Baccalaureate Expansion Without Special Restrictions

At the other end of the policy spectrum, the state could broadly expand baccalaureate programs without specific additional restrictions. Community colleges seeking to offer baccalaureate degrees still would have to upgrade their SACS-COC accreditation from Level I to Level II and meet all of the associated SACS-COC standards, including those pertaining to faculty qualifications, library resources, administrative capability, and student support. Community colleges would also need to gain program approval through the THECB process, which includes requirements related to the resources and academic

plan supporting each degree program. Under this option, the state would not impose any restrictions beyond those in the existing SACS-COC and THECB processes.

To date, no state has left baccalaureate expansion entirely free of such additional constraints, although the policies in Florida are the most open in the nation and have resulted in 26 of 28 community colleges being authorized to provide baccalaureate degrees.

## Authorize Community College Baccalaureate Expansion with Restrictions

Between the status quo and expansion without special restrictions lies a wide range of policy options that would allow for some community college baccalaureate expansion, within limits. These policies could strike a balance between the benefits of community college expansion identified in Chapter 5 (the ability to help meet workforce needs, the potential for increased student access and degree attainment, and the ability to provide higher-quality programs for students pursuing applied baccalaureate degrees) and the concerns identified in Chapter 6 (mission creep at community colleges, counterproductive university–community college competition, and a decrease in the overall quality of the Texas baccalaureate).

The four categories of such options are:

1. Limit the scope of provision statewide.
2. Limit the scope of provision regionally.
3. Require additional planning or monitoring.
4. Change financial arrangements.

### 1. Limit the Scope of Provision Statewide

#### Limit to Certain Fields or Degree Types

States commonly limit community college baccalaureate programs to specific fields or degree types. Texas has allowed community colleges to offer only BAT programs, and Florida and Washington limit their community colleges to BAS degrees. Texas community college baccalaureate programs also have been limited to applied fields. Washington and Florida, two of the least restrictive states, place few limits on fields except that they do not allow community colleges to develop traditional academic baccalaureate programs. Universities in Washington carefully oversee community college program development to ensure that degree programs are accurately represented and are distinct from university programs.

In Texas, stakeholders at both community colleges and universities agree that some limits on fields and degree types would be acceptable. The community colleges we visited did not express an interest in offering baccalaureate degrees and acknowledged that, to remain focused on their mission, they should offer programs that provide direct workforce preparation. Placing limits on fields or degree types probably would reduce the state's ability to meet workforce needs (at least in applied fields) and also limit access to students who want to pursue education outside the specified fields and degrees. At the same time, such limits could eliminate unnecessary duplication and prevent community colleges from succumbing to mission creep.

These types of restrictions could be implemented in a number of ways. Texas could continue to require that all community college baccalaureate programs be BAT programs, which would prevent community colleges from providing bachelor's degree programs in nursing. Alternatively, the state could decide that degree programs that traditionally are considered academic (e.g., engineering, economics, psychology, and English) should be reserved for universities and allow community colleges to develop programs in areas that are considered technical or applied. One of the more commonly adopted policies states use to restrict program development is to require that all community college programs be built on top of existing associate programs. This requirement would mean, for example, that community colleges would not be allowed to offer generic BSN programs and could only offer RN-to-BSN programs. This requirement also would limit direct competition between universities and community colleges and encourage community colleges to remain focused on their mission.

### **Limit the Number of Degree Programs**

Currently, Texas limits community colleges to offering a maximum of five baccalaureate degrees. The community colleges that currently offer baccalaureate degree programs perceive this limit as arbitrary. If the state retains this policy as it expands authorization to additional community colleges, it could help to limit mission creep by ensuring that the baccalaureate programs remain a small part of the community college portfolio. On the other hand, unmet workforce needs might necessitate more than five baccalaureate degree programs at a community college, and students might be interested in such programs.

An alternative policy would be to limit enrollment in community college baccalaureate programs to a percentage of all enrollees. Community colleges therefore would be free

to develop a few large programs or additional small ones. This would limit mission creep but also restrict student access and limit the ability to meet workforce needs.

Such limitations could increase cost per student, particularly if programs remain small and the fixed costs of meeting Level II accreditation standards are allocated over a small number of students.

## ***2. Limit the Scope of Provision Regionally***

### **Allow Universities to Develop Programs First**

One of the major concerns expressed by stakeholders is counterproductive competition that might result from community colleges offering more baccalaureate programs. One way to address this concern is to give universities the opportunity to meet workforce needs first by developing their own programs. Although this would eliminate counterproductive competition, it also could reduce student access, as community college programs might attract a new pool of students to pursue baccalaureate-level education. Another concern is that a university might add a program to its catalog without investing the energy to support it or ensure that it is accessible to students. If Texas adopts this type of policy, it must monitor such programs to ensure that universities are, in fact, meeting workforce needs with their newly developed programs.

There are several different ways of implementing this type of policy. The first is to create a window of time during the program approval process that is reserved for the universities to propose a viable option. If the university is successful, it would get to develop the program and the community college's application would be denied.

A second alternative would be to have a time window allowing for multiple proposals, with priority given to the best overall proposal based on such considerations as quality and cost. This could increase university support for community college baccalaureates, because the universities would have the opportunity to meet identified needs first. In these cases, it would be desirable to notify universities as early as possible to limit the delays that such a process can impose. Some states do this through a letter of intent that colleges submit well before their full program application.

A third option is to give all universities a time window within which to develop new programs before any additional community colleges are authorized to provide baccalaureate degrees. Washington had such a policy in place prior to beginning pilot authorization. The state identified unmet

workforce needs in applied areas and, after sharing this report with the universities, allowed several years for the universities to develop programs. When the universities expressed no interest in developing the programs, the state authorized community colleges to provide these programs. State-level stakeholders claimed that this process facilitated university acceptance because the institutions felt that they had the right of first refusal.

Florida offers only a superficial role for universities in the process. Universities are informed when new degree programs are proposed by community colleges, and they have an opportunity to write letters to express their disapproval of and concerns about programs. Nevertheless, a state policymaker told us that, while universities can offer competing proposals, the letters hold little power in arguing against duplication of existing programs and universities do not feel that they have an adequate voice in the process.

### **Require Community Colleges to Provide Additional Evidence in the Case of Duplication**

Some of the biggest concerns expressed by university stakeholders centered on programs that they viewed as duplicative. For example, opposition to nursing programs was greater than that to others at most institutions because many universities do not offer applied science baccalaureate options or do not view their BAAS programs as a priority. Among regional universities with more applied baccalaureate offerings, there was a strong belief that community college programs in those areas would be duplicative. This duplication could lead to competition for students and resources and harm existing partnerships that are meeting the needs of students and employers. One way to avoid unnecessary competition is to increase the standard for evidence when programs are considered to be duplicative. The burden on the community colleges to prove that the workforce need is being unmet would be greater. For example, the state could require the community college to convene workforce advisory groups, commission independent assessments, and conduct quantitative and qualitative analysis to prove the existence of unmet workforce needs. This requirement would increase cost and effort associated with the approval process, but it also would ensure that concerns about counterproductive competition are addressed.

### *3. Require Additional Planning or Monitoring*

#### **Require Community College Programs to Provide Specific Evidence of Quality**

Universities and some community colleges expressed concerns

about the quality of community college baccalaureate programs. One way to address these concerns is to require that community colleges provide additional, specific evidence of quality either as part of their program approval process or as a monitoring effort after approval. In nursing and other occupations with state licensure, the state could require that a community college demonstrate a specific licensure exam pass rate for their associate graduates in order to propose a bachelor's program. Another option is to require community colleges to seek national program accreditation in fields where it is available. While such accreditation is a recognized sign of quality, obtaining it may require significant resources. National nursing accreditation requires low student-faculty ratios, so many large RN-to-BSN programs do not pursue it because of the costs and difficulty recruiting enough nursing faculty to qualify. In general, these policies can promote quality but they also raise barriers to developing programs and thus can limit access and ability to meet workforce needs.

#### **Limit the Number of Community Colleges Initially Authorized to Offer Baccalaureate Programs**

Texas could opt to slowly increase, in stages, the number of community colleges offering baccalaureate degrees. Washington pursued this approach by starting with four initial pilot schools, then authorizing an additional four, and finally, in 2010, allowing any institution to apply for authorization to offer baccalaureate degrees. One stakeholder from Washington felt that this strategy was useful because it allowed universities to slowly become accustomed to community college baccalaureate programs and because it gave the state a chance to monitor outcomes in the initial years.

Note that this staged approach does not need to apply equally to all fields. For example, because community colleges in Texas have demonstrated success with programs in the applied sciences, the state may elect to place fewer restrictions on authorizing baccalaureates in these fields, where unmet workforce needs have been demonstrated. Nursing, a field that is more controversial and that raises more questions about duplication and threats to quality, may benefit from slower expansion to manage growth and monitor impact. This policy option would provide Texas with an opportunity to limit mission creep and duplication in the short term, but it would also limit its ability to meet workforce needs and expand student access.

#### **Require Self-Studies for All Proposals**

Rather than placing limits on program approval, Texas could choose to require institutions to reflect more extensively on their capacity and on the needs of the workforce. This would provide additional assurances about the viability

of—and need for—a program before it is developed. Self-studies are already required by SACS-COC for an institution's first baccalaureate program, but they are not required for subsequent programs. Requiring these studies for every baccalaureate proposal would help Texas ensure that programs are not developed unless they are truly needed, and it would help institutions determine whether program development is a wise financial decision. One of the baccalaureate-granting community colleges we examined uses self-studies not only to identify programs that are necessary and sustainable but also to choose among multiple proposed programs and identify those that should be prioritized. This type of policy would help ensure the quality of programs and avoid unwise use of resources to develop nonviable programs. However, it would involve added expense, time, and effort for community colleges.

#### **Conduct Follow-Up Studies to Monitor Quality and Mission Creep**

Conversations with stakeholders from Florida and Washington suggest that concerns about mission creep, counterproductive competition, and declining quality have subsided because these concerns have not materialized to the degree originally feared. Data from Florida and Washington indicate that the number of students enrolled in community college baccalaureate programs remains relatively small, tuition has not risen to an unusual degree, university–community college partnerships have not broken down, graduation rates are impressive, graduates are employed, and both graduates and employers perceive benefits resulting from the education. The same is true of the three pilot community college projects in Texas. Initially, there were concerns about competition and fears that the programs would hurt the larger higher education system. To date, these programs remain a small part of the community colleges' portfolio of programs, but graduates and employers perceive the education to be extremely valuable. There were a few initial challenges in some university–community college relationships, but, with time and changes in leadership, the conflicts subsided.

Nevertheless, many stakeholders in Texas, especially at the universities, reported concern that negative effects could surface if authorization is expanded. They argued that the community colleges' initial good intentions about maintaining a small footprint eventually will lead to broad expansion of programs, to the detriment of the state as a whole. Rather than setting restrictions from the start, another option is to develop and monitor metrics to determine whether such concerns are being realized, with the option to add more restrictions if the evidence clearly demonstrates mission creep,

counterproductive completion, or declines in quality. This would afford community colleges maximum flexibility to meet workforce needs and expand access but also provide the state with an opportunity to trigger restrictions immediately with evidence of negative effects. (Both Florida and Washington use outcome monitoring to reassure stakeholders.)

By demonstrating that students in community college baccalaureate programs are distinctly different from the pool of university students and by providing substantial evidence of program success, those who advocate for community college baccalaureate programs would be able to alleviate the concerns of more skeptical stakeholders.

## **4. Change Financial Arrangements**

### **Limit the Reimbursement Rate**

It is possible to shape the implementation of community college baccalaureate programs through funding by limiting the rate at which those programs are reimbursed. Washington provides no additional state funding to community colleges for baccalaureate programs, and community colleges therefore must charge tuition rates similar to those charged by universities for upper-division courses. This may explain the state's positive experience in maintaining university–community college partnerships throughout the expansion period. By requiring community colleges to seek local funding for programs, policies that limit reimbursement rates can both limit competition and ensure that the workforce needs are being closely met, since communities will not fund programs that do not meet workforce needs. For community colleges in poor regions, however, such a policy may limit ability to meet workforce needs and expand access where it is most needed. The quality of the programs may also be at risk because such a policy may reduce the total amount of funding available for the programs.

In Texas, current reimbursement rates are much higher for upper-division compared to lower-division courses at community colleges. This higher funding rate may encourage community colleges to shift their course offerings toward upper-division courses with higher levels of reimbursement, leading to mission creep and, possibly, duplication. Reducing state reimbursement rates may help limit mission creep but could also reduce available resources (thereby lowering quality) and increase tuition rates (thereby reducing access).

### **Change the Source of Funding**

One of the concerns most commonly expressed by university stakeholders was related to competition with community college baccalaureate programs for state assistance. At present, the universities have little reason for concern because

the funds for community college baccalaureate programs are drawn from funding set aside for community colleges. In the long term, however, the allocation of funding for community colleges may increase if community colleges offer substantially increasing numbers of baccalaureate programs. If funding allocations shift and overall higher education funding does not rise, universities may have to function with fewer state resources; universities argued that this would cause their tuition rates to rise (and potentially reduce access) or the

quality of their programs to fall—or both. On the other hand, taking funding for upper-division courses at community colleges from other community college funding sources may reduce state funding for lower-division courses at community colleges. Community colleges that do not choose to start baccalaureate programs, and even those that do, could see reduced state funding for traditional lower-division courses as a result. This may cause community colleges to raise tuition for lower-division courses or drive them to seek higher local taxes.

## Summary

Although there was substantial disagreement among stakeholders about the best path forward for Texas, we found consensus around six general principles that should guide the selection of policy options related to community college baccalaureates:

1. Meeting unmet workforce needs should be a priority.
2. The state and students should realize some benefits from any new program.
3. Any limiting policies should strike a balance between addressing concerns and limiting benefits.
4. Policies should complement and promote investments in other pathways of access to higher education, particularly university–community college partnerships.
5. Decisions about policy should consider costs.
6. Policies should be fair and transparent.

Texas has essentially three major policy options to consider: Make no significant policy changes, authorize community college baccalaureate expansion without special restrictions beyond those imposed by accreditation standards and THECB program approval, or authorize community college baccalaureate expansion with restrictions.

Authorizing community college baccalaureate expansion within specified limits would strike a balance between the potential benefits of and concerns about community college baccalaureate expansion. Restrictions fall into four broad categories, which we summarize in Table 8.1, with the detailed policy options and major aims and potential risks of each option. Any decision regarding community college baccalaureate expansion will necessarily involve difficult tradeoffs. To improve understanding of these tradeoffs, the state should conduct additional studies of cost, quality, and mission creep over time.



Table 8.1. Summary of Detailed Policy Options

Policy Option	Aims	Risks
<b>Policies that limit the scope of provision statewide</b>		
Limit degrees to certain fields or degree types.	Limit mission creep and duplication with universities.	In excluded fields, workforce needs may not be met and access may be reduced.
Limit the number of degree programs.	Discourage mission creep by limiting baccalaureate programs relative to traditional missions.	Workforce needs may not be met and access may be reduced.
<b>Policies that limit the scope of provision regionally</b>		
Allow universities to develop programs first.	Encourage the use of existing pathways and help to avoid duplication.	Access may be limited, and advantages of community colleges in areas of applied learning and small environments may not be realized.
Require community colleges to provide additional evidence in the case of duplication.	Limit duplication.	Additional burden is placed on community colleges in the program approval process.
<b>Policies that require additional planning or monitoring</b>		
Require community college programs to provide specific evidence of quality.	Promote recognized quality in community college programs.	Barriers to entry are raised and therefore may limit access and ability to meet workforce needs.
Limit the number of community colleges initially authorized to offer baccalaureate programs.	Limit statewide mission creep and allow additional control over quality and monitoring through staged expansion.	Workforce needs may not be met, access will be limited, and the benefits of community colleges in applied areas may not be realized.
Require self-studies for all community college proposals.	Promote quality, sufficient resources, and planning for community college programs.	Additional burden is placed on community colleges in program approval process.
Conduct follow-up studies to monitor quality and mission creep.	Provide a sound basis to alter policies if evidence of quality issues or mission creep become apparent.	Time and resources are required to conduct studies.
<b>Policies that change financial arrangements</b>		
Limit the reimbursement rate.	Limit competition for resources and discourage mission creep.	Increased tuition rates may reduce access and limited resources may reduce quality.
Change the source of funding.	Competition among community colleges is reduced, and pressure toward mission creep is limited.	Community colleges and universities may compete for state resources.

# 9 Recommendations for Process and Supporting Activities

In the course of our research, we identified a number of supporting activities that the state could pursue to address some concerns about mission creep, counterproductive competition, and threats to quality. Some of these activities can be valuable even if there is no further expansion to community college baccalaureate programs. Others will be appropriate only if expansion occurs.

## Clarify Different Degree Types

As Chapter 4 describes, there is substantial confusion about the distinction between the various types of applied baccalaureate degrees in Texas. In Washington and Florida, there is only one title for an applied baccalaureate program, the BAS, and this title is used to refer to all degree programs that provide baccalaureate training to applied students. In Texas, the state has generally allowed universities to determine the degree type and to define degree characteristics. This has resulted in three different types of degrees. Some function like BAS programs in other states, with a specific, advanced training focus. Others have little structure and simply allow students to complete a bachelor's degree with any courses that meet requirements for general education and upper-division work. Some of these degrees include multiple tracks, whereas others conceive of these tracks as separate degrees. Although community colleges are limited to offering the BAT, their programs range from

advanced technical education to management degrees with various specific tracks.

Stakeholders across all groups—state policymakers, institutional leaders, department-level staff, and employers—expressed some uncertainty about the different degree types and degree plans, including what workforce needs they served and how programs were similar to or different from other applied baccalaureate programs. Students and parents also are likely to be confused. Confusion about different applied baccalaureate degrees may contribute to several of the concerns raised about expansion of community college baccalaureate programs. When there is no clear accounting of the purposes of different applied baccalaureate programs and the workforce needs they are expected to meet, it is more difficult to determine whether workforce needs are being met. Lack of clear accounting also can lead to duplication of and counterproductive competition

among similar programs introduced under different names. Universities in Washington were particularly concerned about community college baccalaureate programs being given names identical to different university programs. Washington therefore asks institutions to collaborate to resolve any discrepancies about degree program titles. The state feels that this has been useful not only in avoiding duplication but also in ensuring “truth in advertising.”

A lack of clarity about degree types and about the purpose of degree programs also may diminish the quality of the applied baccalaureate. Institutions or departments with unclear conceptions of the degree program may confuse students and give them an unfocused educational experience. If the programs are not targeted to meeting specific workforce needs, they may produce graduates who do not have the KSAs they need to obtain employment. An institution may not market the degree program appropriately, causing students to be confused about why they should enroll and employers to be unclear about what skills the degree signifies. Misinformation about degree types also could lead to negative perceptions of them.

To help address concerns about counterproductive competition and the quality of applied baccalaureates, the state could provide additional guidance about the purpose and structure of various applied degrees and set restrictions to ensure consistency across degree types. A clear taxonomy of degree types and statements of purpose for different areas of degree focus would help streamline the development of degrees and improve understanding among stakeholders.

Understanding the similarities and differences among these applied degrees is essential to identifying potential duplication of programs. A number of universities offer multidisciplinary BAAS degrees, while community colleges offer apparently more targeted BAT programs. Employers always would like programs that are as specifically targeted to their needs as possible, yet very specific programs have lower demand and are more difficult to sustain. The existing Texas community college BAT programs have become more like general organizational management programs targeted to students from a wide range of technical fields, so the differences between these programs and general BAAS programs may be shrinking. If BAAS programs are not considered programs that can meet specific workforce needs, such as the management of technicians, then universities should be informed that these programs will not be considered to meet those needs, and perhaps they should be offered an opportunity to propose more specific applied baccalaureate programs.

**When there is no clear accounting of the purposes of different applied baccalaureate programs and the workforce needs they are expected to meet, it is more difficult to determine whether workforce needs are being met.**

## Clearly Define Fields of Study

Community college stakeholders in our interviews expressed interest in several fields that were not included as applied science baccalaureate options in the preliminary THECB survey of community college leadership. There is a lack of clarity about what degree fields are applied science. If Texas decides to authorize additional community colleges to provide baccalaureate degrees, and if these degrees are limited to certain broad fields, such as the applied sciences, it will be important to clearly define the fields included to ensure that all institutions understand which fields will be open to community colleges and which will remain limited to universities. Stakeholders felt that additional transparency was needed to ensure that community colleges do not invest

resources in developing programs that will not be approved; they also believed that universities can have a clear line of delineation to assuage their concerns about mission creep and duplication of programs.

We heard suggestions for two specific fields—respiratory therapy and radiology—to be defined as applied sciences. We also heard that interior design should be considered as a field for a baccalaureate degree, even though it is not considered an applied science. Each of these fields is experiencing strong upward pressure on entry-level requirements from associations and licensing agencies. The entry-level degrees for respiratory therapy and interior design are or will soon

be at the baccalaureate level, and the entry-level degree for respiratory therapy is now the associate degree (Barnes et al., 2011; NCIDQ Examination, n.d.; Texas Board of Architectural

Examiners, n.d.). Community colleges argued that their ability to serve students interested in these occupations would require a transition to baccalaureate-level programs.

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## Continue to Use THECB Criteria for Program Approval

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The legislature specifically requested that the study identify a clear set of criteria for reviewing community college baccalaureate programs. All stakeholders we interviewed agreed that the existing criteria for program approval are sufficient and should remain unchanged. The THECB's approval process requires institutions to propose programs that are aligned with their role and mission, to meet a workforce need, to attract a critical mass of students, avoid counterproductive duplication with other state institutions, follow a sound curriculum design, have adequate resources (e.g., faculty, program administration, financing, library, information technology, facilities, and equipment), and have access to appropriate clinical placements (where required). The THECB also requires that institutions meet accreditation requirements through SACS-COC (THECB, 2010b). Most of the university and community college interviewees emphasized that the highest priority should be placed on the unmet workforce need criterion in the approval process. Doing so might help alleviate concerns about competition, damage to existing partnerships, and program duplication.

Although the process and criteria for approval might look consistent for all institutions on paper, in practice community college stakeholders perceived that community colleges and universities were held to somewhat different standards. Several argued that existing approval processes for community college baccalaureate programs are not as fair and transparent as they should be, and community colleges face barriers to approval that universities are able to avoid. One community college stakeholder characterized the initial selection of pilot colleges as unfair and was skeptical that the decisionmaking process relating to the community college baccalaureate expansion would be fair and transparent. Several reported concerns that colleges had less influence than universities in policymaking and that this has prevented colleges from offering programs to fill unmet needs in the workforce. Many stakeholders argued, therefore, that not only should the criteria remain the same but they should also be applied fairly and evenly to all institutions, including community colleges.

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## Coordinate Proposals Across Institutions When Demand Is Limited or Resources Are Constrained

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The THECB ordinarily expects institutions to propose programs they envision will meet the workforce needs of their service area, and the THECB reviews those proposals according to its own mandated criteria. In cases where student demand is limited across the state, however, or where there are resources that could be strained seriously by approving too many programs, it may be valuable to coordinate a process that invites multiple institutions to respond to identified workforce needs. Once the THECB receives proposals from all interested institutions, it could evaluate them against each other, as well as against the overall workforce need. This process could

minimize duplication when demand is sufficient for only one or a few programs and also could reduce counterproductive competition for scarce resources.

On the other hand, in cases where demand is concentrated in a specific area, or the needs are widespread and sizeable, relying on institutions to make proposals through the THECB process may be sufficient. In these cases, there is much less value in having multiple alternative proposals to evaluate simultaneously.

## Provide Guidance and Mentoring to Community Colleges

Many interviewees at both community colleges and universities reported that it would be very helpful for community colleges to receive more guidance as they consider developing baccalaureate programs, move through the SACS-COC substantive change process, and begin program development. This process can be time-consuming and difficult to navigate, and community colleges could benefit from the experience of mentors that have been through it. This mentoring would help community colleges that are planning their first baccalaureate program to develop sustainable business and academic plans for new degrees and may help improve quality and provide consistency across programs.

There are a number of ways to provide guidance and mentoring to community colleges in the early stages of the transition to baccalaureate-level programs. In Florida and Washington, staff from a state agency work with community colleges to prepare institutions and help them navigate the process smoothly. Alternatively, institutional leadership at some or all of the three currently authorized community colleges

in Texas may be willing to mentor new institutions. All three colleges have been forthcoming with information about their programs and have been willing to provide input on state processes. This rich source of information and guidance potentially could be compiled into a manual that is accessible to all institutions. Several universities also suggested that community colleges partner with universities to ensure the quality and rigor of programs. Another option is for newly authorized community colleges to join webinars or online, telephone, or in-person discussion groups to address common barriers in the process. Outside of Texas, such organizations as the Community College Baccalaureate Association hold regular conferences, and institutions attending these conferences can learn about best practices and innovative strategies from institutions in other states. Any of these strategies has the potential to improve the planning and approval process (thus reducing startup costs) and is likely to have positive effects on the ability of community colleges to provide high-quality baccalaureate programs. These types of collaborative activities also may promote strong partnerships among institutions.

## Conduct More Empirical Analyses

More research is needed to determine whether institutions are shifting focus and resources away from associate-level programs. Students who enroll in these programs are distinctly different from traditional associate-level students and from university baccalaureate students: They often are older and employed prior to starting the degree program. Because these more experienced students would be expected to have high employment rates and earnings even without earning a bachelor's degree, comparing their average earnings to less experienced graduates of university bachelor's programs does not offer an estimate of the benefit that experienced students get from completing community college baccalaureate programs.

In nursing, much of the case for increased entry-level educational requirements was built on a few studies of safety outcomes. Yet there is little evidence to suggest that these findings can be generalized to the rapidly expanding RN-to-BSN programs or to programs offered by community colleges. In fact, two of the employers we spoke to suggested that the graduates of RN-to-BSN programs do not have the same KSAs as those from generic BSN programs. Understanding the outcomes associated with different pathways into nursing will be critical. If studies

determine that the benefits of BSN nurses are driven by selection into these programs rather than by the benefits of the additional education, then setting higher entry-level standards may increase costs for students and reduce access to nursing careers while providing few benefits to patient care.

Another area of potential interest is the question of student access versus competition for students. As a means of limiting concerns that competition for students is becoming an issue, both Washington and Florida monitor the characteristics of community college baccalaureate degrees to ensure that the population being targeted is unique. Similar studies in Texas could identify areas of inefficient duplication and areas where Texas colleges are able to expand access to nontraditional students and better meet workforce needs.

Understanding the costs of program development and operation across different types of institutions may be particularly important in Texas. Such data could be used to guide financial policymaking at the state or local level, either by allowing institutions to identify sufficient local funding sources or by helping the state set appropriate funding rates for institutions.

# 10 Conclusion

**The notion of community colleges offering bachelor's degrees is no longer unusual. States are increasingly authorizing community colleges to offer baccalaureate degrees, although the expansion has been uneven across the country. The states that authorize expansion often are motivated by desires to increase baccalaureate attainment among residents and to better meet workforce needs. This is especially true in applied fields, where the capacity of traditional state universities can be limited.**

In 2003, Texas joined the ranks of states exploring the expansion of community college baccalaureate programs when the state legislature authorized three community colleges—Brazosport College, Midland College, and South Texas College—to begin granting baccalaureate degrees. No additional colleges have since been authorized to develop these programs. The legislature commissioned this study to inform decisions about whether to expand the number of community colleges authorized to grant baccalaureate degrees in the state and to develop a process for understanding unmet workforce needs in nursing and the applied sciences.

We examined five occupations and found varying evidence of unmet workforce needs. In nursing, we found high demand for BSNs, particularly in urban areas, driven by a push for 80 percent of the nursing workforce to have BSNs by 2020. However, we also found that supply has rapidly increased in recent years, with a surge in RN-to-BSN graduates. Many institutional stakeholders argue that additional capacity could

be useful, but there are concerns that faculty resources are severely constrained, so any plan should include specific strategies to expand the pool of faculty.

In computer and information technology, we found that there likely is unmet need for baccalaureate-degreed workers—again, largely in urban areas—but this unmet need is largely a result of a limited number of students choosing to enter these fields. Community colleges may be able to address unmet workforce needs by bringing new students into applied baccalaureate programs rather than competing with university IT programs for the currently limited pool of students.

Similarly, for management in fire sciences, management of production/operations technicians, and health information management, there are a number of general BAAS programs that may be able to meet workforce needs. If employer preferences for industry-specific management programs are considered sufficient to warrant new programs, then a few specific programs may be able to meet these needs.

In health information technology, we found that the workforce needs primarily fall at the certificate, associate, and graduate levels. There is not currently a need to develop an industry-specific baccalaureate program with technical content in health information technology.

Precisely measuring unmet workforce needs is difficult, but in this report we present ways of using available data to inform both statewide and regional need analyses. The methods we model in the report can be adopted and expanded to analyze needs in other occupations and degree fields. It is important for the state to continue developing processes and tools to better assess and target unmet workforce needs. RAND and HEPI are working on that effort in response to a legislative mandate.

We spoke to a range of stakeholders across Texas and found strong and differing views on the policies that will best serve the state. Decisions about whether to expand the role of community colleges require states to balance conflicting considerations. Historically, community colleges have focused on workforce preparation, remediation of students, and providing an alternative pathway to higher education. Stakeholders are concerned that launching baccalaureate programs at community colleges may distract these institutions from their other important missions or reduce the resources available to them. However, if community

colleges were to develop baccalaureate programs that are connected directly to local workforce needs, such programs could provide a valuable contribution that is aligned with their mission of workforce preparation.

We describe a range of policy options that the legislature and the THECB should consider in decisions about community college baccalaureate expansion. These policies can help balance the potential benefits of such expansion with concerns about the systemic impacts that this expansion may have on competition, cost, and quality. If the state decides to expand baccalaureate programs to additional community colleges, the existing program approval process will be suitable in many cases. Nevertheless, for some occupations and degree fields, concerns about resource limitations or small levels of student demand suggest that state-level coordination may be useful.

Although most stakeholders agree that improving access to higher education and meeting workforce needs are important to Texas, the expansion of baccalaureate programs in community colleges also would require significant financial resources, the availability of highly qualified faculty, a supply of students, and jobs for them to fill. To successfully implement such programs, the state and its institutions will have to secure adequate amounts of these often limited financial and human resources.



# Appendix

## Interview Protocols and Survey

### University Interview Protocols

#### Questions for Leadership

First let's talk about baccalaureate programs for fields that are currently being offered by universities.

1. We have heard that there are unmet workforce needs for nursing/computer and information sciences. Do you have any thoughts on whether workforce needs are being met in these fields? Why or why not?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
2. If there are unmet needs in nursing/computer and information sciences, what approach makes the most sense to offer this degree?
  - a. Do you think that unmet needs in these fields could best be met by expanding existing university programs, developing new programs at universities, and developing partnerships with community colleges? Why?
  - b. Are there benefits of developing community college baccalaureate programs in these areas?
  - c. What challenges do you think that community colleges might face in developing baccalaureate programs?
  - d. What are your thoughts on the ability of community colleges to provide adequate resources to support a baccalaureate program? (library, equipment/facilities/placements, faculty, financing, administration, curriculum)
3. Do you think that there would be any impact of community college baccalaureate programs on your ability to recruit faculty? Secure placements?
4. Do you think that there would be any impact of community college baccalaureate programs on the ability of your graduates to find employment?



Now let's talk about some possible new baccalaureate programs for fields in the applied sciences that aren't currently offered in most Texas colleges.

5. We have heard that there are unmet workforce needs in fire sciences and medical records. Do you have any thoughts on whether workforce needs are being met in these fields? Why or why not?
6. Some have called for bachelor's degrees in these fields to meet workforce needs in middle and upper management positions in fire sciences, and to address the new skills needed for electronic medical records. Do you have any thoughts on whether it makes sense to provide a bachelor's degree in fire sciences and/or medical records? Why or why not?
7. If it was determined that a bachelor's degree for fire sciences or medical records was going to be offered, where do you think it makes the most sense to offer this degree?
  - a. Would your institution be interested in offering this degree, or partnering with community colleges to create a 2x2 program?
  - b. Are there benefits of offering a baccalaureate program in this field at community colleges rather than through universities or partnerships?
  - c. What are your thoughts on the ability of community colleges to provide adequate resources to support a baccalaureate program? (library, equipment/facilities/placements, faculty, financing, administration, curriculum)

Now, more generally...

8. What do you think the process should be for approving a new community college baccalaureate program? Should there be any differences in the approval process for community colleges relative to universities?
9. What types of evidence do you think best indicates:
  - a. Sufficient unmet workforce need?
  - b. A lack of duplication and a critical mass of students?
  - c. Alignment with the goals and missions of community colleges?
  - d. Sufficient resources to provide baccalaureate programs?

## Questions for Subject Matter Experts in Existing Baccalaureate Fields (Nursing, Computer Science, BAT in Health Professions Technology)

1. We have heard that there are unmet workforce needs for nursing, computer/information sciences, and medical records. Do you have any thoughts on whether workforce needs are being met in these fields? Why or why not?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
2. How are graduates from the field doing in the workforce? Do you track employment rates? How else do you track the success of your students?
3. Do you typically turn down qualified applicants for the nursing/computer science/BAT in health info tech programs? How many qualified applicants do you turn down for each seat?
4. Do you think that community college baccalaureate programs in these fields would impact applications or enrollment in your program? If so, how?
5. If there are unmet needs in the field, what approach makes the most sense to offer this degree?
  - a. Do you think that unmet needs in these fields could best be met by expanding programs, developing new programs at universities, or developing partnerships with community colleges? Why?
  - b. Are there any benefits of developing community college baccalaureate programs rather than addressing needs through four-year institutions?
  - c. What challenges do you think that community colleges might face in developing baccalaureate programs?
  - d. What are your thoughts on the ability of community colleges to provide adequate resources to support a baccalaureate program? (library, equipment/facilities/placements, faculty, financing, administration, curriculum)
6. Do you think that there would be any impact of community college baccalaureate programs on your ability to recruit faculty? Secure placements?

7. Do you think that there would be any impact of community college baccalaureate programs on the ability of your graduates to find employment?
8. What types of evidence do you think best indicates:
  - a. Sufficient unmet workforce need?

- b. A lack of duplication and a critical mass of students?
- c. Alignment with the goals and missions of community colleges?
- d. Sufficient resources to provide baccalaureate programs?

## Community College Interview Protocols

### Questions for Leadership

1. Do you believe that there is a need for baccalaureate programs in fire sciences and medical records in your region? Would your institution be interested in providing them?
  - a. If not, what would be the areas within the applied sciences in which you would be interested in offering baccalaureate programs?
2. Why do you think baccalaureate programs in fire sciences and medical records are not currently being provided by universities?
3. What are the reasons you think that existing programs in nursing and computer sciences are not able to meet workforce needs?
4. What evidence do you think should be used to determine whether there are unmet workforce needs in each of these fields?
5. For nursing and computer sciences, do you know whether nearby universities are considering expansion or partnerships with community colleges to better meet these needs? Why or why not?
6. Do you think that graduates in community college baccalaureate programs in these fields would apply for similar jobs to graduates from university programs?
  - a. What types of evidence do you think community colleges might be able to use to demonstrate a lack of duplication and a critical mass of students?
7. What do you think are the benefits of providing baccalaureate degrees in these fields through community college programs rather than university-based programs or partnerships with universities?

8. What challenges do you think that community colleges might face in developing baccalaureate programs?
9. What are your thoughts on the ability of community colleges to provide adequate resources to support a baccalaureate program? (library, equipment/facilities/ placements, faculty, financing, administration, curriculum)
  - a. What types of evidence do you think community colleges might be able to use to demonstrate sufficient resources to provide baccalaureate programs?
10. Can you explain how offering a program in each of these fields fits with the mission of your institution?
  - a. What evidence do you think should be used to determine whether offering baccalaureate programs at community college is aligned with the role and mission of the institution?
11. What do you think the process for approving a new community college baccalaureate program should be? Should there be any differences in the approval process for community colleges relative to universities?

### Questions for Subject Matter Experts in Existing Baccalaureate Fields (Nursing, Computer Science)

1. Do you think that existing degree programs in nursing/ computer science are meeting workforce needs? Why or why not?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?

2. Do you know whether universities in your region are considering expansion or partnerships with community colleges to better meet these needs? Why or why not?
3. Do you think that graduates in community college baccalaureate programs in nursing/computer sciences would apply for similar jobs to that graduates from university programs would apply for?
4. What do you think are the benefits of providing BSNs/ computer science baccalaureates through community college programs rather than university-based programs or partnerships with universities?
5. What challenges do you think that community colleges might face in developing baccalaureate programs?
6. What types of additional resources might you need to support a baccalaureate program? (library, equipment/ facilities/placements, faculty, financing, administration, curriculum)
  - a. What types of evidence do you think community colleges might be able to use to demonstrate sufficient resources to provide baccalaureate programs?

*In nursing, some specific questions about clinical placements, RN- to- BSN versus straight-through BSNs, the role of magnet hospitals in driving demand.*

*In computer science, some specific questions about how the program might look similar or different relative to existing associate and bachelor's degree programs at universities.*

## **Questions for Subject Matter Experts in Possible New Baccalaureate Fields (Fire Sciences, Medical Records)**

1. In fire sciences/medical records, do you see a need for additional skills and credentials that is not currently being met? Can you explain a little bit about these workforce gaps?

- a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
2. If so, how do you believe these workforce needs can best be met? What would the degree program look like?
  - a. If existing production of associate degrees and certificates are not sufficient, can you explain why you think that a baccalaureate program like the one you described is the best way to meet these needs?
    - i. Why can't lower-level credentials meet these needs?
    - ii. Why can other bachelor's degrees not meet these needs?
  - b. Can you describe what the program might look like? What types of courses might students take in addition to general education requirements? Technical courses? Management courses?
  - c. What evidence do you think should be used to determine whether there is a need for bachelor's degrees in fire sciences/medical records?
3. Do you have evidence that students would be interested in this type of program?
4. What would jobs for graduates of these programs look like? Who would the employers be?
  - a. Do you have any sense of the number of jobs that might be available for graduates of this type of program?
5. What do you think are the benefits of providing these types of applied science baccalaureates through community college programs rather than university-based programs or partnerships with universities?
6. What challenges do you think that community colleges might face in developing baccalaureate programs?

# Questions for Community Colleges with Existing Baccalaureate Programs

1. When you proposed the program, what evidence did you have of employer and student demand?
  - a. Statistical data
  - b. Discussions with employers and (prospective) students
2. Has your experience in attracting students and employment of graduates matched the evidence you had at inception?
3. Based on this experience, how do you recommend that colleges and THECB collect and interpret evidence of demand for new programs?
4. What changes did SACS accreditation require at your institution? Can you approximate the one-time and annual costs of these changes?
  - a. Library
  - b. Administration
  - c. Faculty
5. Did the specific program(s) you implemented require any additional changes at your institution? Can you approximate the one-time and annual costs of these changes?
  - a. Facilities
  - b. Faculty
6. Did you solicit and/or receive any donations to underwrite some of the expenses? From whom and for what purposes?
7. How has the financial performance of the program(s) compared with your original financial plan?
8. Are the faculty teaching upper-division courses subject to any different policies for employment, teaching loads, research, or other responsibilities? Have these faculty placed any new demands on your college?
9. If other community colleges are interested in offering baccalaureate programs, what do you think is most important for them to understand before proceeding?

# Nursing Stakeholder Informational Interview Protocol

1. Can you give us a little detail on your background and current position?
2. What evidence do you see of a shortage of nurses, and in particular nurses with baccalaureate degrees?
  - a. Do you track any quantitative data?
  - b. Who do you talk with? How often?
  - c. What other evidence is used to identify unmet workforce needs?
3. What do you think are the biggest drivers of shortages in nursing?
4. In your opinion, what are the best approaches to addressing nursing shortages? In other words, if you had full control of the workforce and postsecondary systems in TX, what would you propose doing?
5. What are the benefits of using community college baccalaureate programs to address nursing shortages?
6. Are there any challenges to using community college baccalaureate programs to address workforce needs?
  - a. Placements?
  - b. Quality?
  - c. Employer view of CC baccalaureates?

# Applied Science Informational Interview Protocol

1. Can you give us a little detail on your background and current position?
2. Do you find that more baccalaureate-degreed individuals are needed in the field, and why?
  - a. Do you track any quantitative data?
  - b. Who do you talk with? How often?
  - c. What other evidence is used to identify unmet workforce needs?
3. What do you think are the biggest drivers of unmet workforce need?
4. In your opinion, what are the best approaches to addressing unmet workforce needs? In other words, if you had full control of the workforce and postsecondary systems in TX, what would you propose doing?
5. What are the benefits of using community college baccalaureate programs to address unmet needs?
6. Are there any challenges to using community college baccalaureate programs to address workforce needs?

## Interview Protocols for Other States

1. Does state policy restrict community college baccalaureate programs in any way? Are baccalaureate programs restricted to certain fields? Which ones?
2. What were the main reasons for and against community colleges offering baccalaureate
  - a. For (examples): increased access, low cost, relationship with employers
  - b. Against (examples): low quality, mission creep, competition with four-year institutions
3. How has your state's experience since adoption of the policy compared with these anticipated reasons in favor or against?
4. Have relationships among community colleges and universities changed since community colleges began to offer baccalaureate programs. Have universities become more or less willing to partner with community colleges since the policy was adopted?
5. How did four-year colleges and universities view the policy before adoption? Have they changed their views since adoption?
6. Were there any challenges with accreditation at community colleges? Were changes required to meet accreditation standards?
  - a. Resources (e.g., library, facilities)
  - b. Administration
  - c. Faculty
  - d. Curriculum
7. Do you require national program-level accreditation for baccalaureate programs at universities or community colleges?
8. Were there any state-level requirements for community colleges to be approved for baccalaureate programs beyond accreditation? What is the process for program approval? Does it differ for community colleges and universities?
9. How does the state fund baccalaureate programs at community colleges? Does funding differ for upper-division courses relative to lower-division courses?
10. Have community colleges instituted higher fees for baccalaureate students? Does funding differ for upper-division courses relative to lower-division courses for baccalaureate students?
11. Has the average cost to students for certificates or associate degree programs changed with the addition of baccalaureate programs?

12. Have community colleges become more or less able to serve their traditional mission as a result of the addition of baccalaureate degree programs?
13. Have community colleges put a strain on resources that may be considered to be limited (e.g. qualified faculty, state funding, clinical placements)?
14. Do you know how graduates of these programs are perceived by employers?
15. How has student demand for these programs compared with expectations?
16. Are you interested in community colleges adding more baccalaureate programs? In which fields?
17. Do you think every community college has the capability to provide successful baccalaureate programs? If not, what characteristics of community colleges would make them best suited to offer these programs?
18. If states are considering expanding baccalaureate programs at community colleges, what do you think it is most important for them and/or community colleges to understand before proceeding?
19. Are there particular policies that you think could be put in place to minimize any potential negative impacts of allowing community colleges to offer baccalaureate programs?

## Science Technician Employer Protocol

1. Can you tell us a little bit about the make-up of the current science technician workforce, with a focus on qualifications and credentials?
2. Are the skills and qualifications of the workforce aligned with what you need as an employer? If not, can you describe where the workforce is falling short?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
3. What do you think is the best way to get these additional skills (e.g. on the job training, college degree)? Are the current degree/certificate programs meeting needs? If no, why not?
  - a. What types of programs do you think might help to meet these needs?
  - b. What evidence do you think should be used to determine whether there is a need for bachelor's degrees in science technician fields?
  - c. What would jobs for graduates of these programs look like? Who would the employers be?
  - d. Do you have any sense of the number of jobs that might be available for graduates of this type of program?
4. What do you think is the best approach to developing programs for science technicians? Is this best done by universities, community colleges, or partnerships between the two? Why?
5. What challenges do you think that community colleges might face in developing baccalaureate programs?
6. What criteria do you think that a community college should have to meet to offer a baccalaureate program?
7. Are you concerned about the ability of community colleges to provide the resources needed to develop a successful baccalaureate program? Why or why not?

# Nursing Employer Protocol

1. Among nurses in the region, do you see a need for additional individuals with bachelor's degrees?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
  - b. What are the reasons you think that existing programs are not able to meet workforce needs?
2. Would you hire BSNs from community college nursing programs? Why or why not?
  - a. How do you think graduates of community college programs might differ?
  - b. Would you prefer graduates from universities programs to graduates of community college programs?
- c. Would graduates from community colleges hold the same types of positions as graduates from universities?
3. Do you think there are benefits to providing BSNs through community college programs rather than university-based programs or partnerships with universities?
4. What challenges do you think that community colleges might face in developing BSN programs?
5. What criteria do you think that a community college should have to meet to offer a BSN?
6. Are you concerned about the ability of community colleges to provide the resources needed to develop a successful baccalaureate program? Why or why not?

# Fire Sciences Employer Protocol

1. Can you tell us a little bit about the make-up of the current fire sciences workforce, with a focus on qualifications and credentials?
2. Are the skills and qualifications of the work force aligned with what you need as an employer? If not, can you describe where the workforce is falling short?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
3. What do you think is the best way to get these additional skills (e.g. on the job training, college degree)? Are the current degree/certificate programs meeting needs? If no, why not?
  - a. What types of programs do you think might help to meet these needs?
  - b. What evidence do you think should be used to determine whether there is a need for bachelor's degrees in fire sciences?
- c. What would jobs for graduates of these programs look like? Who would the employers be?
- d. Do you have any sense of the number of jobs that are might be available for graduates of this type of program?
4. What do you think is the best approach to developing programs in fire sciences? Is this best done by universities, community colleges, or partnerships between the two? Why?
5. What challenges do you think that community colleges might face in developing baccalaureate programs?
6. What criteria do you think that a community college should have to meet to offer a baccalaureate program?
7. Are you concerned about the ability of community colleges to provide the resources needed to develop a successful baccalaureate program? Why?

# Computer and Information Science/ Technology Employer Protocol

1. In the computer and information technology sector in your region, do you see a need for additional individuals with bachelor's degrees?
  - a. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
  - b. What are the reasons you think that existing programs are not able to meet workforce needs?
2. Would you hire graduates from community college baccalaureate programs in computer and information sciences? Why or why not?
  - a. How do you think graduates of community college programs might differ?
  - b. Would you prefer graduates from university programs to graduates of community college programs?
    - c. Would graduates from community colleges hold the same types of positions as graduates from universities?
3. Do you think there are benefits to providing computer and information sciences through community college programs rather than university-based programs or partnerships with universities?
4. What challenges do you think that community colleges might face in developing baccalaureate programs?
5. What criteria do you think that a community college should have to meet to offer a baccalaureate program?
6. Are you concerned about the ability of community colleges to provide the resources needed to develop a successful baccalaureate program? Why or why not?

# Health Information Technology Employer Protocol

1. Can you tell us a little bit about the make-up of your current medical records/health information technology workforce, with a focus on qualifications and credentials?
2. Are the skills and qualifications of the work force aligned with what you need as an employer? If not, can you describe where the workforce is falling short?
3. What do you think is the best way to get these additional skills (e.g. on the job training, college degree)? Are the current degree/certificate programs meeting needs? If no, why not?
4. What evidence do you think should be used to determine whether there is a need for bachelor's degrees in medical records?
5. What would jobs for graduates of these programs look like? Who would the employers be?
6. Do you have any sense of the number of jobs that might be available for graduates of this type of program?
7. What evidence do you think should be used to determine whether there are unmet workforce needs in this field?
8. What do you think is the best approach to developing programs in medical records? Is this best done by universities, community colleges, or partnerships between the two? Why?
9. What challenges do you think that community colleges might face in developing baccalaureate programs?
10. What criteria do you think that a community college should have to meet to offer a baccalaureate program?
11. Are you concerned about the ability of community colleges to provide the resources needed to develop a successful baccalaureate program? Why?



# Post-Webinar Feedback Survey

1. In your view, what are the biggest benefits of establishing community college baccalaureate programs in fields and regions of high need?
2. In your view, what are the biggest challenges in establishing community college baccalaureate programs?
3. What do you think of the criteria that currently exist for the approval of baccalaureate programs? Do you have any suggestions as to how these criteria should be applied in the case of community colleges? Are there any other criteria you think a community college should meet to develop and maintain a baccalaureate program?
4. If you have any other reactions to the webinar or other feedback on the topic, please share it with us.
5. Please choose the category that best describes you:
  - a. Community college administrator
  - b. Community college board member
  - c. Four-year college or university administrator
  - d. Four-year college or university board member
  - e. Policymaker
  - f. Business representative
  - g. Other \_\_\_\_\_ (Please describe)



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**RAND Headquarters Campus**

1776 Main Street

Santa Monica, CA 90401-3208

Tel: (310) 393-0411 Fax: (310) 393-4818