



Expanding Opportunity

*How States Can Accelerate the Use of Career Pathways Programs
to Help Young People Access Meaningful Careers*

By Linea Koehler, Harold Hinds, and Nick Lee

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Executive Summary

Many in the United States, particularly young people between ages 16 and 24, struggle to access high-quality employment. To build a more equitable and sustainable economy, all Americans need access to the skills, training, and opportunities necessary to acquire meaningful careers. Career pathways programs are formal academic and workforce skill-building experiences, carefully constructed to ensure that learners progress through — and master — a particular set of knowledge and skills. Cultivating high-quality career pathways programs is an effective strategy for providing fast, high-quality training and education, which can help young adults enter or reenter the workforce in careers that ensure economic and social stability.

States and districts use career pathways in a variety of ways, in a variety of settings, and under vastly different circumstances to give young people access to meaningful careers and stable lives. In this report, we conducted case studies of career pathways initiatives in **Texas, Ohio, and Colorado** to better understand the triumphs and challenges inherent in creating and operating career pathways programs amid a rapidly changing policy context. These states were selected because they are geographically, politically, and demographically diverse, and they approach the creation of career pathways in markedly different ways. While all states operate some form of career pathways programs,¹ focusing on Texas, Ohio, and Colorado allows us to study a cross-section of the U.S.

This report examines the implementation of career pathways programs in these states to surface themes about the factors that support and hinder implementation, and to identify recommendations for state policymakers interested in supporting these programs. Through research and interviews with education stakeholders, we gathered meaningful insight into how legislators, policymakers, and program operators build high-quality programs and overcome barriers.

While the barriers and advantages to effectively facilitating pathways programs vary from state to state, we identified the following themes as the most common factors that, for good or for ill, have the greatest impact on effective facilitation of career pathways programs in Texas, Ohio, and Colorado:

- Bipartisan support among policymakers.
- Access to quality teachers and administrators.
- Presence or absence of quality partnerships.
- Stigma about career pathways programs.
- Lack of data on student participation and program quality.

This report discusses the impact of these factors in the three states analyzed and provides comprehensive recommendations for state and federal policymakers, who are in the best position to effect the changes that need to be made. Our recommendations include policy changes and practical administrative retooling that will have the greatest impact on improving pathways programs in these states and across the country.

Recommendations

1. Leverage the bipartisan support that career pathways programs garner to grow and improve these programs.
2. Increase teacher pay to attract high-quality teachers with industry credibility and expertise.
3. Incentivize public-private partnerships between K-12 school district and university-based pathways programs and high-demand industries to improve the quality of these programs.
4. Invest in communication efforts to highlight the benefits of pathways programs.
5. Invest at the state and federal level in data systems and strategies to track program effectiveness and longitudinal program outcomes.

These recommendations call for policymakers to proactively address problems that arise when formulating legislation and creating regulations. They also call for policymakers to allocate additional funding to help alleviate some of the biggest barriers to improving and expanding career pathways programs. Policymakers who do so will create more opportunities for young people in this country and will prepare more Americans for the kinds of careers that propel our economy forward.

Cultivating high-quality career pathways programs is an effective strategy for providing fast, high-quality training and education, which can help young adults enter or reenter the workforce in careers that ensure economic and social stability.

Introduction

Recent events such as the COVID-19 pandemic, the looming risk of an economic recession, and the ever-increasing cost of higher education highlight significant problems that many in this country experience in accessing sustainable, high-quality employment.² As we look to recover from the economic turmoil of the past several years and build a more equitable economy, in which people have jobs with salaries that allow them to live fulfilling lives, state and federal policymakers must do more to level the playing field and provide all Americans with access to the skills, training, and opportunities necessary to establish meaningful careers.

Career pathways programs are one potential solution. They offer formal academic and workforce skill-building experiences constructed to ensure that learners progress through — and master — a particular set of knowledge and skills. Cultivating these programs can be an effective strategy for providing fast, effective, and high-quality training and education that help individuals enter, or reenter, the workforce in careers that ensure economic and social stability.

Despite a growing body of funding and legislation dedicated to pathways programs, however, barriers arise in the shift from policy and program creation by legislators to implementation and operation of these programs by program administrators. While the barriers and advantages to effectively facilitating pathways programs vary from state to state, we identified the following themes as the most common factors impacting career pathways programs in case studies from **Texas, Ohio, and Colorado**.³

These states have established career pathways programs that provide young people with meaningful opportunities. The programs, and the unique circumstances at play in the policy landscapes of each state, highlight the barriers and opportunities inherent in operating pathways programs in these states and across the country. The case studies surfaced five key themes for the effective implementation of career pathways programs:

- There is vast bipartisan support for career pathways programs that policymakers can leverage to expand and improve these initiatives.
- Access to quality teachers and administrators is a challenge to growing and improving career pathways programs.
- The presence or absence of quality partnerships with private industry impacts program effectiveness.
- Stigma about career pathways programs is a major barrier to equitably expanding the reach and accessibility of career pathways programs.
- The lack of program quality and longitudinal outcome data is a serious hurdle to maximizing the effectiveness of these programs.

We provide recommendations for those best positioned to effect the changes necessary to ensure that career pathways programs are most effective: state and federal policymakers. Our recommendations call for adopting practices to proactively address problems that arise when formulating legislation and creating regulations. They also call for policymakers to allocate additional funding to help alleviate some of the biggest barriers to improving career pathways programs and ensuring they achieve their intended outcomes.⁴



Career pathways programs include a wide array of opportunities and initiatives that support skill development and upward mobility for participants.

At their core, all career pathways programs connect individuals with training and educational opportunities. However, the types of organizations administering these programs, as well as their target populations, program design, and ultimate outcomes, vary substantially. Apprenticeship programs connect job seekers with training in a specific field to learn under and alongside working professionals.⁵ They often come with the promise or expectation of employment upon successfully completing an apprenticeship program.⁶ The U.S. Department of Labor has a program that lists formally registered apprenticeship programs.⁷ These programs are industry-vetted, approved, and validated by the Department of Labor for quality and effectiveness.⁸ Other career pathways programs target younger students with the goal of providing exposure to different careers and industries, often through site visits or mentorships.⁹

Career pathways programs are becoming increasingly popular and have a great potential to benefit Americans ages 16 to 24.

Career pathways programs have been around for decades, but they have become an increasingly popular and mainstream option in recent years (Appendix). Given the diversity of programs and uneven data, it's impossible to know exactly how many students participate, but data suggest it is in the millions — and growing.

About 7.6 million high school students participated in career-technical education (CTE) programming, the most common type of career pathways program, in the 2019-20 school year.¹⁰ That was nearly half of the 15.4 million total high school students in the U.S. that year.¹¹ Also, according to the Department of Labor, during the 2019-20 school year, nearly 221,000 students enrolled in apprenticeship programs.¹² This represented a 70% increase from 2011, when the Department of Labor began tracking the growth of these programs.¹³

Within the broad landscape of career pathways programs described above, this report focuses on the subset of pathways programs that serve young adults (ages 16 to 24). These young people are at a stage in their lives where access to strong and effective career advancement programs can impact their life and career trajectories in meaningful ways.¹⁴ They have also experienced some of the highest rates of unemployment in the wake of the COVID-19 pandemic and are overrepresented in occupations most affected by the economic distress caused by the pandemic.¹⁵

Studying career pathways programs gives policymakers, educators, and employers a better understanding of how these programs can boost the economy and lead to greater economic prosperity for more Americans.

One reason participation in career pathways programs is growing may be their potential to help address America's escalating problems with the ever-increasing costs of higher education, the uncertain value of pursuing a traditional college degree, and an evolving job market.

The traditional four-year college degree track is expensive and costs continue to rise.¹⁶ Over the past 10 years, the costs of attending college have increased, whether at a public institution, private nonprofit, or private for-profit college.¹⁷ Rising costs leave many young people priced out of a traditional college education.¹⁸ As a result, there is greater interest in alternative routes to economic mobility and less expensive access to higher education — giving students the opportunity to start college with credits, earn an associate degree as part of a pathways program, or bypass traditional college altogether and obtain certifications or certificates that can open doors to meaningful careers.

A growing number of Americans are beginning to question whether the traditional college track is the best path to career success.¹⁹ Polling from 2022 shows that less than 50% of Americans believe that a bachelor's degree or higher is required to ensure financial security,²⁰ suggesting that it may be time

to disrupt traditional expectations on what higher education should look like. Employers are also embracing the idea that the ability to perform and excel in a role is not determined solely by traditional higher education degree attainment.²¹ For example, more employers are relying on apprenticeship programs, which allow them to get a better understanding of prospective employees' actual skills rather than looking strictly at education credentials.²² Between 2013 and 2021, the number of Americans who participated in career-based apprenticeship programs increased 87% from 221,091 to 413,662.²³ Furthermore, with growing interest in initiatives like federally registered apprenticeship programs, more employers are also beginning to build their own training programs.²⁴ Employers are recognizing that these initiatives create a more sustainable talent pipeline and enable them to influence the skills and competencies candidates bring to their businesses.²⁵ In a November 2020 survey of 315 employers from predominantly in-demand industries, employers stated that career pathways programs contribute to more job-ready candidates that meet their skill needs. Among the employers surveyed, 77% reported hiring an employee in part because of their CTE experience.²⁶

Career pathways programs can help fill the gaps that traditional higher education is leaving in individuals and industries by providing formal training for young people to enter jobs that require credentials and prioritizing skill attainment as the ultimate demonstration of success.²⁷ Connecting young people with training and employment opportunities leads to meaningful improvements in economic and life outcomes, and studying these programs can help policymakers understand how to use them most effectively.

Unfortunately, research on pathways programs is nascent and detailed information about program effectiveness is still emerging. Early research, however, suggests that pathways programs can be effective in preparing participants for a changing economy and ensuring their economic resilience and success. One small, randomized controlled trial of Project QUEST, a health care-related occupational-skills training program implemented at community colleges in Texas, found

that six years after completing the program, QUEST students earned close to \$5,000 a year more than control group students.²⁸ Another study of students involved in Integrated Basic Education and Skills Training (I-BEST) programs, which support students in developing basic workforce skills through vocational courses,²⁹ showed that they persisted in community college courses at increased rates relative to their non-I-BEST peers.³⁰

Career pathways programs can fill important gaps in helping students gain the skills and experience they need for employment, outside traditional higher education. However, more research is needed to better understand who participates in these programs and the characteristics and conditions that drive program outcomes.

Career pathways programs draw from a complex web of public, private, and philanthropic funding used by schools and districts.

State, federal, and private funding sources all support career pathways programs in various states.

State and local funding streams are unique and often influenced by the political climate in each state. While specific details about state funding vary by state, savvy program administrators can use state and local funding to curate a portfolio of innovative programs that can have a meaningful impact on participants.

Federal funding streams often supplement state and local funding used for pathways programs. These funds help program administrators pay for things like professional development, technical assistance, and program expansion. The Perkins Career and Technical Education Act (Perkins V) is a primary federal funding source, but there are numerous other funding streams, including the Supplemental Nutrition Assistance Program (SNAP) Employment and Training Farm Bill Pilot Projects, the Department of Defense's SkillBridge program, and Health Profession Opportunity Grants, to name just a handful of programs across multiple federal agencies (e.g., U.S. Departments of Labor, Education, Agriculture, Defense, Health and Human Services, and Commerce) that can add significant complexity to program structure and governance.³¹

Private funding streams typically come from corporate partners or philanthropy. Their absence (or availability) varies greatly depending on local context. Corporations regularly partner with public entities (school districts, institutes of higher education, state workforce agencies and programs) and provide funding, apprenticeships, and job placements; they often work with policymakers and advocates to create new talent pipelines for their workforce. These partnerships go a long way to help ensure that a program has the resources, connections, and supports needed to flourish.

The three states we studied illustrate the many differences and similarities in funding streams, structures, and processes for pathways funding throughout the nation.

State and federal policymakers must do more to level the playing field and provide all Americans with access to the skills, training, and opportunities necessary to establish meaningful careers.

Case studies of career pathways programs provide insight into how state and federal policymakers can support them.

The landscape of pathways programs in the three states we studied — **Texas, Ohio, and Colorado** — illustrate the many differences and similarities in funding streams, structures, and processes for pathways funding throughout the nation. In conducting case studies of career pathways programs operating within each state’s unique context, we spoke with individuals representing three broad groups of stakeholders:

State policymakers and advisers working with legislators to create, improve, and oversee career pathways programs in schools. These stakeholders provide meaningful insight into some of the political or broader policy decisions being considered as pathways programs are created. They also articulate the vision and mission of policymakers in creating these programs.

District leaders trying to implement pathways programs in schools. These individuals are often working with state agencies that set standards on pathways programs and program administrators who are providing these supports. District leaders spend a lot of time trying to get the best supports to their students and school communities.

Program administrators responsible for operating pathways programs, trying to navigate state policies and work with district leaders to make their programs most effective. These stakeholders are responsible for the day-to-day facilitation of pathways programs and work to ensure that programs provide quality supports for participants.

In the research we conducted and the conversations we had with policymakers and practitioners, several issues arose that were particular problems in each state. In Colorado, for example, state-level cross-agency communication and decision-making was a concern. Decisions impacting career pathways programs made by different agencies often impact, and sometimes impinge on, decisions made by other agencies. Unlike Colorado, where multiple sources of oversight

make operating pathways programs challenging, Texas stakeholders cited a general lack of oversight at the state level as a major issue. District and program administrators are given relatively little guidance on how to operate programs, which sometimes puts undue pressure on practitioners to make decisions without the proper amount of support.

While these are valid concerns worthy of discussion, our focus in this report is on common issues that we encountered across the three states we studied. The issues we highlight and the recommendations we propose address shared areas for growth and improvement in the career pathways landscape in these states.



Themes Identified

Through our research and interviews with Texas, Ohio, and Colorado stakeholders, we identified five common themes in pathways work that policymakers must consider when trying to cultivate these programs. The following case studies show how the themes play out in these three states and affect policies related to pathways programs.

THEME 1

There is vast bipartisan support for career pathways programs that policymakers can leverage to expand and improve these initiatives.

One of the largest sources of federal education funding allocated to states is provided by the Carl D. Perkins Vocational and Technical Education (Perkins) Act. Legislation creating Perkins funding was first passed in 1984.³² The legislation was intended to increase the quality of technical education in the U.S. to spur economic growth and ensure equitable access to such programs.³³ Perkins funds help states cover the costs of an array of education-based initiatives, including career pathways programs.

Policymakers and practitioners from all sides of the political aisle see pathways programs as a viable way to help Americans secure their economic futures. The clearest example of bipartisan support for career pathways in recent history came with the 2018 passage of Perkins V.³⁴ The bill reauthorized and built upon the prior Perkins legislation that is a critical federal funding stream for vocational programs in the U.S., providing \$6 billion to states over five years (\$1.2 billion annually) to support secondary and postsecondary programs that help students develop their academic, technical, and career skills. The stated intent of this reauthorization was to strengthen and improve the quality of vocational education and to expand vocational education opportunities nationwide.³⁵ The reauthorization included provisions that shifted federal accountability for career and technical education programs to the states while also promoting work-based learning opportunities such as apprenticeships and internships. It also maintained core elements of the program, such as supporting technical education for secondary and postsecondary students at community colleges, technical schools, and other public or nonprofit programs. Amid rampant partisanship in Washington, D.C., Perkins V was approved unanimously in both chambers of Congress and was championed by the White House.³⁶

Interviews with leaders in Texas, Ohio, and Colorado indicated that there is strong bipartisan support at the state level as well. Policymakers in Texas observed near universal support from legislators on bills to expand career pathways programs, while education advocates in Ohio and Colorado noted that state legislators on the left and right connected on a personal level with the idea that career pathways programs can offer their constituents a way to advance socially and build themselves up.

The expansion of these programs in Republican-leaning states like Texas, battleground states like Ohio, and Democratic-dominated states like Colorado illustrates the capacity of pathways programs to build bridges across political divides and create lasting change for communities. In a time of extreme political gridlock and rare bipartisan collaboration, pathways are a unique opportunity to work across the aisle. Policymakers from across the political spectrum who desire to deliver meaningful results for Americans should seize this moment and capitalize on the bipartisan support for career pathways programs.

Access to quality teachers and administrators is a challenge to growing and improving career pathways programs.

Our research found that recruiting quality teachers is a long-standing issue in career pathways programs. The U.S. Department of Education reported that during the 2016-17 school year, most states had teacher shortages in CTE programs.³⁷ Researchers studying career pathways programs note frequent barriers to recruiting and retaining quality staff. Among the most common challenges is the relatively low salary. In a multistate survey conducted among teachers in agricultural-focused career pathways programs, instructors ranked salary concerns as among the highest issues they encountered in teaching in career pathways programs.³⁸

The national teacher and paraprofessional shortage in the broader education sector has also spurred discussion around recruitment and retention challenges in the career pathways sector. According to research by Advance CTE, more than two-thirds of administrators directing CTE programs at the state level reported a “moderate or severe CTE teacher shortage in at least one Career Cluster at the secondary level.”³⁹ Teacher turnover and shortages have been shown to negatively impact student achievement, particularly for already-disadvantaged students.⁴⁰ Turnover is also costly, as schools have to invest significant personnel time and cover expenses related to recruiting, hiring, and training new teachers.⁴¹

Policymakers in Texas and Ohio spoke extensively about the challenges of retaining quality teachers and administrators who can execute the vision of legislators and ensure that programs provide quality outcomes. Advocates in Colorado shared the efforts that districts are undertaking to address these challenges.⁴² Several administrators also noted that persistent staffing challenges were exacerbated by COVID-19. Since the onset of the pandemic, additional financial strain on district budgets and greater staffing needs in fields like health care, transportation, and manufacturing have further driven career pathways teachers out of the classroom.

Often, concerns about teacher pay make recruiting and retaining qualified instructors challenging. This is not an issue for pathways programs in every state. The national average for CTE teacher salaries is \$68,960.⁴³ Many states exceed this average. In Ohio, for example, the average yearly salary for pathways instructors is \$74,150.⁴⁴ Other states invest less in paying pathways teachers. Texas pays its pathways teachers far below the national mean, averaging just \$61,860 per year.⁴⁵ Similar to Texas, Colorado pays its CTE teachers an average of \$63,700 per year.⁴⁶ States like Texas and Colorado will likely always have a hard time recruiting and retaining teachers unless they make compensation more competitive, not only relative to the national average but also to the industry jobs these teachers may otherwise be able to fill in their respective labor market.

The presence or absence of quality partnerships with private industry impacts program effectiveness.

As noted above, partnerships with private industries can be critical to ensuring the success of career pathways programs. We consulted one study examining the impact of public-private partnerships in cultivating skill development programs in the United States, China, and Russia.⁴⁷ The researchers explained that because industries and job markets in the U.S. are very open, market imperfections create inherent mismatches between the demand and supply of labor.⁴⁸ The researchers found that for countries like the U.S., where market demands may not always match labor supply, governments and organized partnerships with private industry can help alleviate much of that friction.⁴⁹

Virtually all the stakeholders we interviewed noted the tremendous benefit that public-private partnerships provided in ensuring the success of career pathways programs. District administrators in Texas shared how different the experience is in a district like Dallas — with extensive private partnerships — when compared to a district like San Antonio with comparatively fewer. A program administrator in Ohio explained how their access to extensive private partnerships enabled them to build strong and effective programs that connect participants with meaningful careers. Likewise, policymakers in Colorado shared how state-level efforts to cultivate public-private partnerships helped its career pathways sector grow in ways that provide substantive benefit to program participants.

Ready access to partners paved the way for Texas, Ohio, and Colorado leaders to address problems with everything from funding to participant interests. Communities that lacked substantive access to industry partners noted that they struggled to expand programs and felt limited in the types of career pathways programs they could offer. These communities also had to rely more heavily on state or federal funding sources; without additional private investment, public dollars were not always adequate to address their needs. Cultivating partnerships was a universal aim for all stakeholders involved in work concerning pathways programs.

Access to extensive private partnerships enabled [Ohio] to build strong and effective programs that connect participants with meaningful careers.

Stigma about career pathways programs is a major barrier to equitably expanding the reach and accessibility of career pathways programs.

Career pathways programs often suffer from longstanding stigma about their quality and purpose, creating challenges for program operators seeking to expand and strengthen them. This theme plays out in the research and in the interviews we conducted in Texas, Ohio, and Colorado.

Career pathways programs are often stigmatized and seen as low-quality because, in the past, such programs were used to track students whom teachers and administrators did not think were fit for college.⁵⁰ This tracking was often disproportionately infused with bias against low-income, and Black and Hispanic students.⁵¹ While extensive effort has gone into improving these programs, this stigma predisposes many students and families to view career pathways programs as an undesirable alternative to higher education.

In one study interviewing current pathways program students, alumni, and administrators across multiple states, the researcher noted that students encounter a general misconception that pathways programs lack civic and intellectual learning.⁵² The researcher said that parents tend to be the first layer of social framing around these programs and “tend to stigmatize ... CTE degree programs as being of less value than an academic program and the last resort for higher education.”⁵³ Sentiments like these seep into public consciousness.

Many district administrators confirmed this challenge. Administrators in Texas and Ohio shared that they have consistent challenges convincing wealthy families to consider career pathways programs, which they perceive as lower quality than traditional college. In Colorado, however, poor and working-class families often have a negative view of career pathways programs. While pathways programs in the state are generally open to all students, regardless of socioeconomic status, it can be difficult to convince students from poorer families to consider them because these families have been told, and believe, that a college education is the only path to upward economic mobility. For families from across the socioeconomic spectrum, the stigma associated with career pathways programs often outweighs other considerations that make them a desirable option for many students.

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The lack of program quality and longitudinal outcome data is a serious hurdle to maximizing the effectiveness of these programs.

Fragmented data systems are a long-discussed challenge in education,⁵⁴ and issues become particularly acute when attempting to track student outcomes through grade school, postsecondary instruction, and into the workforce. Across the country, school districts and institutions of higher education have antiquated or insufficient data systems that are also often disconnected. Efforts to track students once they enter the workforce often rely on lagging, incomplete federal or state data on unemployment or self-reported information. Even in states with robust system-level data tools, tracking remains challenging due to the use of different student identifiers in K-12 vs. postsecondary instruction, variable data definitions across systems, poor data quality processing, and gaps in key information like pathways participation data or information about the certificate or degree program that community college students are pursuing.⁵⁵

The lack of quality data tracking is a national issue that limits the effectiveness and growth of career pathways programs. In a recent policy brief with recommendations for how data can be used to improve CTE programs, MDRC, an education research organization, explained how many states still struggle to use data effectively.⁵⁶ The brief noted that “only about half of states collect quantitative data on credential attainment” at all, the few states that collect CTE data mostly rely on information provided by individual schools and districts, there is no centralization or standardization in how this data is collected, and data collection often excludes programs operating outside schools and districts.⁵⁷

These points are echoed in a recent report published by the U.S. Government Accountability Office. It found, based on interviews with the U.S. Department of Education and state officials, program providers, and other stakeholders including business representatives, that “there are limited data on long-term CTE outcomes and a lack of information on evidence-based strategies, thereby making it difficult to identify and replicate efforts that are known to be effective.”⁵⁸ As of 2018, the latest year data was available, states continued to struggle with linking K-12 student data to pathways-related data.⁵⁹ Only 51% of states had operationalized automated links to postsecondary data, 53% to Perkins CTE data, and 31% to workforce data.⁶⁰ Data tracking of outcomes for CTE programs is at best fractured and imprecise, while accessing data that has been collected is difficult and time-consuming.

Several of the stakeholders we spoke with noted that districts and program administrators often do not know how effective their programs are in practice. One administrator in Texas said that the lack of data about program outcomes in their district meant that it took them years to realize that a prominent pathways program for military services was not actually preparing students for the careers the district intended. A former state policymaker in Ohio explained that ineffective programs can grow alongside effective ones because there is such little data about which programs are effective and which are not. Advocates in Colorado shared frustrations about the inefficient and often conflicting data systems used by different state and local agencies, which monitor pathways program outcomes in a piecemeal fashion that does not yield useful information.

While the district administrators, program directors, and policymakers we spoke with all touted the benefits of career pathways programs, they also readily admitted that measuring the true impact and quality of their programs was a work in progress. At present, very little infrastructure exists to capture meaningful information like the short- and long-term impact of pathways programs on career advancement, the number of students who go into careers associated with the programs they studied, and the programs that have the greatest impact on student success.

Case Studies

Texas, Ohio, and Colorado

Analyses from these three states explain the advantages and barriers that make operating career pathways programs more (or less) difficult. Each case study highlights themes that emerged from an examination of specific programs in each state that provides insight into important issues for career pathways programs more broadly.

These states were selected because they are geographically, politically, and demographically diverse, and because their differences and similarities illustrate how efforts to cultivate pathways programs work in practice, what success looks like for thriving pathways programs in different contexts, and what insights can be offered into the national landscape for career pathways programs. Specifically, the case studies show the gaps that emerge between efforts by policymakers to create and allocate funding for pathways programs and the actual operation and facilitation of those programs.

CASE STUDY

Texas

Pathways Landscape in Texas

Texas is experiencing a skills gap, in which 54% of jobs in the state require skills training (beyond high school, but less than a four-year degree) but only 45% of workers in the state are trained at the desired level. Pathways programs can help close the gap. Data issues like double-counting can make it difficult to capture all participation in pathways programs and activities across a given state, but CTE participation data is a useful proxy. It measures the number of individuals who complete at least one course in a secondary or postsecondary CTE program.

At the high school level, Texas CTE courses are organized around 14 approved statewide programs of study,⁶¹ plus an additional eight regional programs of study determined by labor market demand.⁶² Texas has done extensive work to map each program of study to related postsecondary programs by level of institution (e.g., high school, industry certification, certificate or license, associate's degree, bachelor's degree, master's degree, doctoral degree, or professional degree).⁶³

The goal has been to establish multiple entry and exit points within these pathways, so that students are empowered to go directly from high school into the workforce or keep furthering their education.

During the 2020-21 school year, 1,860,775 students participated in secondary CTE courses and postsecondary CTE programs in Texas.⁶⁴ This was nearly 27% of the 6,964,478 total students attending K-12 and nongraduate program postsecondary institutions in the state that year.⁶⁵

In addition to CTE programs, the state administers several college and career readiness school models including early college high schools (ECHS), Pathways in Technology Early College High Schools (P-TECH), and Texas Science, Technology, Engineering, and Mathematics (T-STEM) academies, which provide more intensive opportunities for students to bridge the gaps between high school, college, and career and allow them to earn credentials like degrees and certifications.⁶⁶ In addition to these specialized, state-run schools, innovative models such as the Centers for

Applied Science and Technology (CAST) Schools, a nonprofit-run network of five tuition-free, industry-led, career-themed high schools in San Antonio, provide further pathways-based options for students.⁶⁷

Success of Bipartisanship

In 2019, Texas lawmakers enacted legislation creating P-TECH. P-TECH schools are open-enrollment high schools that provide historically underserved students an opportunity to receive both a high school diploma and a credential or associate degree.⁶⁸ To do so, they utilize innovative partnerships with colleges, universities, and private companies in various industries.

Passing legislation to create P-TECH schools required strategic timing and a willingness to look beyond partisan lines to form a strategic coalition. Contrary to what one might expect, Texas lawmakers were eager to work together, cross party lines, and find common ground to create these programs. The legislative vote to pass the law creating P-TECH schools passed with 142 representatives in the Texas House of Representatives voting in favor, two legislators abstaining, and not a single vote against; in the state Senate, 31 senators voted for these programs and none against.⁶⁹

A former policy adviser working with Texas legislators to represent the interests of the San Antonio Independent School District (SAISD), one of Texas' largest school districts, shared the following about the early stages of the process:

“Especially being a blue district in a red state, we knew that we were going to have to find initiatives that we could work with the lieutenant governor’s office on. When we heard that they were interested in this, and that they had visited New York to see some of the P-TECH schools there, we realized there was an opportunity.

... We thought, ‘How could we get the policy framework that allows for kids to have a fifth year to graduate from high school and get college credit? Let’s help accelerate some of these dual-credit pathways and let’s open up some new opportunities for our kids with the lieutenant governor’s blessing.’ Because there was agreement, we were able to get the bill passed in the legislature relatively easily.”⁷⁰

The goal has been to establish multiple entry and exit points within these pathways, so that students are empowered to go directly from high school into the workforce or keep furthering their education.



Good Staffing Makes a Difference

Strong program administrators, who know how to competently manage staff and resources and who believe in the vision for pathways programs, were a major factor in whether programs succeeded. Reflecting on the importance of good staffing, the policy adviser we spoke with again noted:

*"You need to have a vision, you need to be relentless about it, because you have to pick and choose limited priorities ... and then you need project managers that actually believe in that leader's vision to make sure it actually gets implemented as intended. That is one of the most important things that I see in ensuring this work becomes a reality."*⁷¹

Of course, strong administrators and program managers also help find the right teachers. For instance, Texas' CAST Schools assist teachers in getting certifications and provide additional stipends for teachers in high-need areas. To address teacher shortages, they utilize instructional facilitators who teach part-time and then provide coaching to other teachers with the rest of their time. Administrators also help set the tone for the program. CAST leadership make it a priority to create a supportive environment for students and deemphasize the importance of state assessments so that teachers do not feel pressure to teach to the test. Administrators at CAST also track and analyze the quality of their programs using a variety of measures to ensure that they are getting the appropriate return on investment for every new initiative they undertake.

The Texas stakeholders interviewed also noted the importance of staffing, specifically retaining teachers in pathways programs. This concern was noted for all types of pathways programs throughout the state, in both secondary and postsecondary programs. Some attributed the challenge to the requirement that pathways program instructors have industry experience and expertise in order to prepare students for skilled

roles, combined with the reality that many who meet that requirement could be working in higher-paying positions in the private sector.

An administrator from SAISD gave voice to the serious barriers experienced in San Antonio in attracting and retaining quality teachers:

“It is our number one challenge, and I can’t be alone in this ... we are trying to find health science teachers that will stay at \$54,000 a year as an entry-level pay. That’s extremely hard. We require health science teachers to have some kind of medical certification and a medical-related degree to qualify to teach. If you have a medical certification and a bachelor’s degree, you’re probably more likely to be [a registered nurse] or something higher.

Radiologists, EMTs, paramedics — those are the people being hired in the teaching field as a result; and guess what, when COVID hit, they could make more money, right? It was bad before COVID, but when COVID hit, and they could make more money other places, it got even worse. ... Huge challenge there ... it’s ripping the heart out of the program. Without the teacher you can’t teach. We are seeing similar patterns in cybersecurity, construction, manufacturing, and other STEM-related fields.”⁷²

Policymakers in Texas have attempted to address this problem, in part, through the Grow Your Own (GYO) grant program.⁷³ GYO, which is intended to increase the quality and capacity of the state’s teacher workforce, includes one pathway that is specifically designed to provide competitive funding to high schools participating in the Perkins program so that they can develop local solutions for recruiting and preparing CTE teachers, especially in rural communities where CTE staffing challenges are more pronounced.⁷⁴

Opportunities for Partnerships Differ Depending on Community

The P-TECH program has been significantly more successful at scaling in Dallas than in San Antonio due to the accessibility of funding and partnerships. Dallas Independent School District (ISD) boasts the largest P-TECH expansion in the country with 15 schools.⁷⁵ Even though the school districts are of a similar size, San Antonio is home to only six P-TECH schools.⁷⁶

A significant contributing factor in Dallas’ ability to scale more effectively is the existence of larger industries with corporate partners that have been willing to help the district create pathways programs. In contrast, an SAISD administrator, responsible for coordinating pathways programs for the district, explained the challenges he faces in trying to operate programs in an area that has fewer connections with private companies:

“It’s inequitable in different parts of the state of Texas for sure. Dallas ISD and Dallas College have a significant industry community built in that are able to fundraise to cover all the costs of dual enrollment, many of which we embed.

Here in San Antonio, [our industry community does not yet] have the ability to raise funds of that caliber, even though they are working on it. [The district] has to budget for \$167 per student per course per semester for [the college partner] to teach one of our students. ... The state is actually looking at that [this district-by-district disparity] because in some other areas the districts are paying much more money per student.”⁷⁷

Stigma About Program Quality Makes Growth a Challenge

The policy adviser we interviewed described being faced with the unique challenge of having a “lack of diversity”⁷⁸ in San Antonio’s pathways programs, in the sense that most participants are low-income Latino students. While the lack of diversity varies by program, this is an issue common across Texas’ CTE programs, especially in districts with high concentrations of Latino students. Program administrators in Texas are struggling to recruit higher-income white, Asian, and Black families to participate. The adviser explained:

“San Antonio is a city where you have tremendous amounts of Latino excellence and there has been a lot of participation from that community and everything has been so focused on serving this population that already exists in the schools. But the city has seen a lot of gentrification and there is an influx of more white, middle-class families, which is good because those families can come in here and bring in socioeconomic wealth and prosperity to the community to the extent where it opens up more opportunities for the remaining students that can be better served.

*With this evolving reality, we want to make sure that our schools actually have a chance to be integrated. As a result, we have been super intentional in San Antonio about making sure that kids from all walks of life have a fair shot in our schools, and getting them involved in CTE is part of that. We want our programs to actually represent all of San Antonio.”*⁷⁹

These experiences align with what other advocates say is a challenge of bringing diverse groups into pathways programs. Despite research showing that learners in CTE are more satisfied with their education and prepared for

postsecondary, programs are still working to overcome negative perceptions and can struggle to recruit learners from all factions of their community.⁸⁰

Need for More and Better Data to Track Participation and Measure Effectiveness

Texas has made recent strides in improving its data systems; however, challenges persist. In 2015, the Texas legislature implemented changes to address issues with data collection for the state’s CTE programs. Prior to these changes, each school “district could develop its own programs of study and course sequences.”⁸¹ Districts self-reported CTE concentrator data and could have different course requirements for the same program of study. This created inconsistency in the data. To address the issue, the state created a uniform framework that all districts receiving Perkins V “funding must use to monitor participation in CTE programs.”⁸² Texas also developed an automated coding system to analyze student course completion records and assign a code based on the number of CTE courses completed, allowing for consistent data collection and comparison of CTE course completion across the state.⁸³

While Texas can now reliably collect accurate data on CTE program participation and completion, more granular data (e.g., specialized high schools) and the ability to disaggregate by race/ethnicity remain areas for improvement. Furthermore, stakeholders still do not have all the information they need at the local level, nor are there robust systems to track the impact of pathways participation on individual student outcomes. One high-level administrator with Dallas ISD explained:

*“Our district collects data and submits it to the state to verify any real-time data [on certifications] and it has to be done at the district level, then we send it to the state and wait for them to confirm it and send it back to us after the school year ends to give us our count for exams passed.”*⁸⁴

The state does not provide the district with any substantive data support. To compensate, staff in Dallas ISD have built a home-grown tool within Microsoft Excel that they use to track more immediate data and share it with administrators to inform decisions about CTE programming. In terms of longitudinal student outcomes data, the state has been working to improve its Texas Public Education Information Resource (TPEIR) data system but has not yet built all necessary elements. This administrator went on to note:

“Right now, we can track the students who are enrolling in college or earning associate’s degrees. What we cannot track, though, is students who don’t go to college or decide to go to trade school ... we can’t track what jobs [they] are getting into. That is the next-generation piece of work we’re hoping to do.

*But as it stands now, the state doesn’t have a tool for that. We’re probably going to create an opt-in tool. So, for example, if Student A gets a plumbing certification and decides to go be a plumber, he can choose to tell us where he is working. We want [workforce outcomes], but nobody’s tracking it, at least in the state of Texas.”*⁸⁵

As the administrator described, the TPEIR system currently contains pre-K through grade 12 graduation data as well as higher education application and enrollment data.⁸⁶ It does not, however, have the capability to link students to their employment or earnings data.

Much like his counterpart in Dallas ISD, the SAISD administrator explained that his district has similar data tracking challenges when trying to understand the quality of their military readiness programs. He said that, despite being at the forefront when it comes to incorporating military readiness as part of pathways work, Texas still has a long way to go when it comes to tracking preparedness and outcomes:

*“When it comes to military readiness, the state of Texas defines it as you have enlisted in the military. It’s a very low bar. When JROTC was placed under me as a department, I learned we weren’t even collecting the data on ASVAB results. [The ASVAB, or Armed Services Vocational Aptitude Battery, is the U.S. military’s aptitude test that determines eligibility for service roles.]”*⁸⁷



Ohio

Pathways Landscape in Ohio

Ohio heavily prioritized the development and growth of pathways programs to meet its workforce needs.⁸⁸ The state passed legislation in 2018 that requires every Ohio student in grades 7-12 to have access to 12 CTE programs across at least eight of the 16 Ohio-approved career fields, or 10 programs across eight fields for smaller schools.⁸⁹ In 2020, nearly 50,000 Ohio high school students earned industry-recognized credentials.⁹⁰

Ohio also has one of the nation's most complex landscapes for career pathways program delivery. Contributing to this complexity are the more than 100 Area Technical Centers (ATCs), which Ohio uses to deliver pathways programs tailored to the unique needs of the communities they serve.⁹¹ ATCs are CTE-focused institutions that serve secondary and postsecondary students "from across multiple geographies, offering sub-baccalaureate-level education and training," and "provide learners with the skills they need to obtain credentials leading to high-wage, in-demand employment."⁹² Ohio also has career-technical planning districts (CTPDs), established in the 1970s, that offer CTE programming. CTPDs can be structured to provide programming in one of three ways — entirely contained within one school district, in partnership with several districts, or via special career centers.⁹³

Ohio operates a number of technical centers (OTCs) that are distinct from its community college system and focus on career and credential attainment, while community colleges primarily focus on degree attainment.⁹⁴ Often, OTCs partner with local CTPDs and may even be co-located.⁹⁵ This structure makes OTCs more efficient, as administrative resources and costs are shared between OTCs and partner CTPDs. Removing duplication frees up time to focus on learners and reduces costs that can be plowed back into serving students.

Established, Near Universal Political Support

Ohio is unique in that most of the state's career pathways policies are included in the state's biannual budget. Unlike many states, Ohio provides designated funding specifically for career pathways programs. Passed as part of the state's expected budget, these policies reduce scrutiny on individual lawmakers. This also serves as a striking example of bipartisanship. Chad Aldis, vice president of Ohio policy at the Thomas B. Fordham Institute, remarked on the genuine cross-party support for these programs:

*"In conversations with lawmakers, Careers in Technical Education does draw broad bipartisan support. It is an area where we have categorical funding for in our state budget, so there's additional dollars that go specifically for the education of students in CTE programs. ... In the last couple of budgets, it [pathways programs] has been a big priority of Gov. [Mike] DeWine and Lt. Gov. [Jon] Husted."*⁹⁶

Competent Administrators Make All the Difference

The meaningful investment Ohio policymakers make in cultivating career pathways programs provides substantial benefits to student participants. Once they are codified in statute and the state budget, however, these programs' continued success depends on having administrators and district leaders who can make the most out of funding and effectively facilitate programs on a day-to-day basis.

Upon the creation of a recent career pathways program training young people to set up broadband and 5G in Nelsonville, Ohio, a member of the Governor's Office of Workforce Transformation stressed the importance of capable program administrators:

"You need competent people. Competent people, that's not only order number one, it's like order number one and everything else is way down below, because you can have all the funding in the world, but if you don't have the right people in place to set up the programs, do recruitment, make sure there are adjunct instructors tied to industry, it doesn't matter. There's a lot that has to be done."⁹⁷

The administrator went on to explain how competent and effective local partners made this program a success — and lamented that, in his experience, this competency could not be expected for every project.

Strong Partnerships With Quality Organizations Lead to Success

A big reason why Ohio's career pathways space continues to thrive is its ability to cultivate meaningful public-private partnerships. These partnerships connect students with meaningful opportunities through initiatives like apprenticeships, which lead directly to jobs that help set participants up for true career success. Among Ohio's extensive cadre of pathways programs, and an example of how the state uses public-private partnerships to do innovative work, is Youngstown State University's (YSU) Excellence Training Center, an innovative partnership with IBM in which students participate in a credential accumulating training program to build skills in in-demand tech fields like cybersecurity, data science, and information technology.⁹⁸

After completing the program, participants receive a certificate of completion, earn a minimum of four IBM credentials, and are eligible to apply for IBM apprenticeships. Successful participants have become software engineers, cybersecurity specialists, and data scientists. YSU's partnership with IBM is one of several innovative corporate partnerships the university is cultivating.

Discussing the advancements in public-private partnership-based pathways programs underway at YSU, Jennifer Oddo, vice president of the Division of Workforce Education and Innovation at YSU, said:

"I have an entire institute focused on leadership and teamwork. I have an excellent training center that is state of the art, advanced manufacturing, and advanced technologies. I have an open-air Innovation Park, in which I just brought on training using unmanned aircraft, and lots of other things. So, I do a lot of really interesting work here. So really, the intersection of my work is building this division, and getting more people during training with industry credentials, and leveraging our IBM partnerships, and other partnerships with Amazon, Microsoft, FANUC, and Rockwell Automation."⁹⁹

Bias About Pathways Programs Limits Their Reach

Despite Ohio's established history with career pathways programs and the fact that support for these programs is codified in state statute, many in the state still express skepticism over its promise. Lisa Gray, president of Ohio Excels, said that perception is a challenge. She explained that funding needs to be provisioned to raise awareness of pathways programs and the positive outcomes they produce.

"I think one of the big challenges that we have in Ohio is getting students and families to believe that these opportunities can be as good as colleges, and so I think that there is still very much a stigma around these pathways. The state is often very hesitant to invest money in communications, but we really [need] better communications to students and parents about how these different pathways set kids up for success." ¹⁰⁰

Gaps in Data Collection Hamper Efforts to Grow and Improve Programs

Data also plays an important role in making the argument for pathways programs. Quality data systems allow advocates to speak about the return on investment these programs offer individuals and the state. However, in Ohio, like many other states, fragmented data systems make it difficult to share the full picture. Speaking to the specific misalignment of district, higher education, and workforce data sets in the state, Gray provided helpful insight:

"One of the things that we struggle with in Ohio around this is being able to measure the outcomes. We don't connect our data systems as well as we need to. We need to be able to see whether or not students going through a specific pathway or earning a specific certification or credential actually get a job in that field, and what sort of wages that's paying. That is a big black hole in our data system.

We also have sort of a similar hole for our traditional public schools. When we look at kids going on to higher education, how many actually finished — we know that it's only about 40 to 45% in Ohio — and so what are those students doing afterwards? How can we use that data to drive policy change in this space?" ¹⁰¹

Data can help assure policymakers that pathways are a valuable use of public funds and drum up enthusiasm around legislation that would expand support for these programs. It can also help families and students understand the value of these options. However, interviewees pointed to challenges in securing investment in robust data systems or push changes to existing data systems that would allow for better longitudinal tracking. A significant constituency in Ohio is concerned with privacy protections and opposes greater data collection.¹⁰² These groups influence policymakers and district leaders, disincentivizing attempts to carve out portions of education budgets for data system reform.¹⁰³



Colorado

Pathways Landscape in Colorado

Pathways programs in Colorado tend to fall into two groups — designated career and technical schools, and CTE integrated into comprehensive high schools, including concurrent enrollment, early college, and P-TECH programs.¹⁰⁴ Of Colorado's 522 high schools, 401 have CTE programs.¹⁰⁵ These programs are successful in Colorado, with data showing that, in 2020, 98% of high school students completing CTE programs went on to pursue postsecondary education, join the military, or enter the workforce.¹⁰⁶

Bipartisanship Achieved by Highlighting What Matters

As in Texas and Ohio, Colorado has seen tremendous growth in career pathways programs, spurred in great part by the spirit of bipartisanship that these programs engender. Legislators on the left and the right see the benefits of these programs to their constituents and tend to look at supporting pathways programs as a way to help their local communities.

Stakeholders advocating for career pathways programs in the state explained that these programs provide an opportunity to connect with policymakers in heartfelt ways that positively impact their work.

Scott Laband, president of Colorado Succeeds, a statewide nonprofit that works with policymakers, school districts, and community leaders to expand workforce development options in Colorado, explained how policymakers often see their role in this space:

"We go straight to the leadership of the caucus and say, 'You know, at the end of the day, you're going to be known for a handful of things that you've accomplished over here at the statehouse, what do you want those to be? And how do you want to use your limited time to build new opportunity pathways for young people and job seekers? What a great legacy that would be for you and for the young people in our state. We can help you make that happen, and the best part is, you can do it in a bipartisan way.'"

*"I think the issue area of talent development is one of the few bipartisan spaces we have left where you continue to see real strong alignment and real opportunity for substantive impact."*¹⁰⁷

These programs are successful in Colorado, with [2020] data showing that ... 98% of high school students completing CTE programs went on to pursue postsecondary education, join the military, or enter the workforce.

Teacher Shortage Impacting All Aspects of Education Sector

Colorado, like many other states, has struggled to attract and retain teachers. Throughout the 2021-22 school year, nearly 8% of the state's teaching positions "remained unfilled for the entire school year," and 20% were filled through shortage mechanisms, which include relying on long-term substitutes and retired teachers.¹⁰⁸ Rural districts were hit particularly hard. While many factors contribute to the issue, low teacher pay and increasing cost of living are of particular concern in Colorado. There is a troubling national trend of teachers being paid less than other, equivalent professionals with college degrees; however, in Colorado, the gap is widest with teachers earning a staggering 35.9% less.¹⁰⁹ As Colorado's housing costs increased sharply in recent years, a report by the Keystone Policy Center shows that "less than 20% of homes in the state are valued at a price that is affordable for teachers earning the average salary in the school district in which they work."¹¹⁰

Some school districts in Colorado are trying to innovate and find creative solutions to attract and retain teachers, such as asking the community to help house teachers or partnering with developers to build affordable housing for teachers and their families.¹¹¹

Some districts and industry partners, particularly those in the skilled trades and construction, are excited about taking things a step further and seizing opportunities to improve their communities. For example, these partners are using pathways programs to improve their communities by building students' employability skills and addressing housing affordability challenges. Referencing the Salida School District's building trades apprenticeship program, Laband said:

"One school district has even created an affordable housing project for its teachers, where they try and address the teacher shortage by saying if you come to our district, your housing will be affordable because it's going to be built by students. And that's pretty incredible!"¹¹²

The program, which began in 2015, allows students to collaborate with local businesses to construct affordable housing for teachers in the area. Not only do the students acquire practical experience that can be valuable in the job market, but the program also helps to create a sustainable pool of talent within the local industry.¹¹³ Custer County, another school district in Colorado, ran a similar program, where building trade students helped convert a vacant, district-owned building into affordable apartments for teachers.¹¹⁴

While solving the issue of teacher shortages will require more robust policy intervention, these creative initiatives showcase examples of how to leverage pathways programs to address staffing issues. Without a doubt, however, these are stopgaps and much more needs to be done in the longer run to attract and retain educators, both in the teaching profession generally and in CTE programs specifically.

Expanding Public-Private Partnerships Helps

While efforts are ongoing to ensure that all students have equitable access to the high-quality career pathways programs Colorado has to offer, one major benefit in the state is the fact that those high-quality opportunities continue to expand. Championed by Colorado's governor in 2016, CareerWise Colorado aims to integrate work-based learning through efforts like apprenticeships into K-12 and higher education systems.¹¹⁵ As a state-sponsored intermediary, CareerWise serves as the broker between employers, firms, schools, and school districts and individual apprentices.¹¹⁶ The program, which has "seen more than 1,400 apprentices hired by more than 120 employers" since serving its first cohort in 2017,¹¹⁷ is focused on bringing effective apprenticeship programs to every public school district in the state. The apprenticeships are designed as three-year training programs involving three types of sites: high schools, training centers at community colleges, and on-the-job training programs with employers. CareerWise is a promising model and shows great potential for success as Colorado plays a much greater role in establishing and managing partnerships with industry.



Ensuring Equal Access and Addressing Stigma

Like Texas and Ohio, Colorado faces challenges with ensuring that all interested students have access to the opportunities that career pathways programs offer. In Colorado, many of the disparities in access break down along lines of race and geography. Many industries in Colorado lack diversity.¹¹⁸ Analysis of pathways program data has shown that there is still a need to expand equity in program access.¹¹⁹ Furthermore, 86% of school districts in Colorado are considered rural.¹²⁰ Students in these districts have fewer choices when it comes to program opportunities and must travel farther to access them, introducing transportation and logistical challenges. Rural collaboration, including school and industry partnerships, has shown promise in expanding access but requires greater and more sustained supports.¹²¹

Unlike in Texas or Ohio, programs in Colorado designed to serve the most marginalized and underserved students tend to be leveraged more often by families with more resources. Discussing why so many privileged students access these programs, Laband notes:

*“They have asymmetrical access to information about the programs due to the emphasis that administrators, educators, and counselors in certain parts of the state place on the programs. In addition, they benefit from the social capital within wealthier families who are encouraging them to take advantage of the programming and support them in arranging their class schedules and transportation needs. Many students in our intended audience do not yet experience these benefits.”*¹²²

Laband noted the importance of incentivizing pathways providers to proactively engage underserved student populations, saying:

“People have to be able to access these programs. It starts with awareness but also requires personalized support like scheduling and transportation.

*So, there needs to be financial incentives in place to ensure that learning providers are targeting subpopulations with additional communications about the programs, as well as navigation resources and supports to convert the learners’ aspirations into access. You have to put those incentives in place, because the benefits to young people are tangible and can be transformative.”*¹²³

Fragmented Data Leads to Inefficiencies

Though career pathways programs in Colorado have garnered extensive support from policymakers across the political spectrum and from the general public, as is the case in many states, the fragmented nature of the state’s accountability and data monitoring systems makes it difficult to see how programs can be improved. Like Texas and Ohio, Colorado does not have complete demographic data on participation in its P-TECH schools and districts, nor does it track students’ completion of future postsecondary credential efforts.¹²⁴ As is the case in many states, Colorado also struggles with rather fractured communication and funding among agencies involved with career pathways and workforce development work. The fractious nature of this work means that there is insufficient coordination and collaboration to support students. According to Laband:

“It’s incredibly challenging to align and coordinate workforce initiatives in a region when these efforts are co-owned by so many different agencies, and in Colorado you have several, including the Department of Higher [Education], the Community College State System, the Workforce Development Council, Office of Economic Development and

*International Trade, Department of Education, and the Governor’s office. While the broad interest in these programs among diverse state agencies is a testament to their popularity in this moment, there is more that must be done to demonstrate collaboration across agencies. We need a more concentrated focus on communication and alignment to establish greater clarity around key priorities and more effective implementation of those priorities. Without it, the learning providers in the field experience significant confusion and frustration, fractured funding opportunities, and the learners are not benefiting from a holistic or user-centered experience that is as efficient, valuable, or cost-effective as they deserve.”*¹²⁵

Policymakers in Colorado are working to overcome its data shortcomings and are showing what is possible when policymakers commit to improvement. Colorado has received federal funding to develop a state longitudinal data system to collect and analyze data at the individual student, course-specific, institutional, and systems level in its public education system. The Colorado Relevant Information to Strengthen Education (RISE) System has been a work in progress since the state received its initial grant in 2007.¹²⁶ In June 2022, the state signed into law the Postsecondary Student Success Data System, HB22-1349, which directs \$3 million to the creation of a public-facing, interactive data system to track student progress from higher education into the workforce.¹²⁷ The data system, which will be linked with RISE, will include measures such as employment outcomes, earnings, and the time “it takes for students to recoup the cost of their education.”¹²⁸

When complete, RISE will bring together K-12, higher education, and workforce data points to provide a comprehensive picture of student experiences and associated impacts. The system has enormous potential to show which pathways programs offer the most meaningful return on investment, help students make informed decisions about their futures, and give administrators and policymakers the data they need to decide how best to invest funds.

Recommendations

In a variety of settings and under vastly different circumstances, policymakers are creating quality pathways programs that give young people in this country access to meaningful careers and stable lives. However, more needs to be done to improve the landscape for these programs. Policymakers must prioritize the additional support necessary to ensure that programs have adequate staffing and resources to function effectively.

Below are several recommendations for improving pathways programs. While program and district administrators certainly have a role to play in improving career pathways programs, the changes we recommend will need to be made by state and federal policymakers.

1. Leverage the bipartisan support that career pathways programs garner to grow and improve these programs.

As demonstrated by the recent support of Perkins V and state-level programs like P-TECH in Texas, or by the appropriation of funds toward the Postsecondary Student Success Data System in Colorado, there is strong bipartisan support for career pathways work. Though Texas, Ohio, and Colorado have very different political landscapes, stakeholders from each state indicated that pathways programs are one area with consensus across party lines.

In an era where political polarization and partisanship continue to grow, meaningful bipartisan legislation is rare. Policymakers should leverage the bipartisan support for pathways legislation to make progress in education and create positive change in their communities. In 2018, for example, state legislatures across the country passed 85 CTE-related bills — “more than any other education issue besides teaching.”¹²⁹ Strong pathways programs prepare young people with the skills and connect them with the opportunities they need to succeed in today’s economy. As Laband noted, policymakers are typically only known for “a handful of things” during their time in office. Why not “set up opportunity pathways for young people and job seekers all across our country ... in a bipartisan way.”¹³⁰ The bipartisan nature of these programs allow for true innovation.

2. Increase teacher pay to attract high-quality teachers with industry credibility and expertise.

Teacher and staff pay is a major concern in many areas, including among pathways program instructors. District administrators and policymakers alike indicate that hiring and retaining quality teachers and competent administrators to run programs is both pivotal to operating successful pathways programs and a persistent challenge. In places like San Antonio, this was due in part to the inability of SAISD to pay teachers what they could make in private practice. With COVID-19 tightening district budgets and expanding options for professionals, especially in fields like health care and medicine — where some of the most popular pathways programs are found — staffing these programs has become an even greater challenge.

We found that increasing teacher pay is a critical strategy to consider when thinking about how to attract quality career pathways instructors. States like Colorado and Texas that pay relatively low salaries when compared to the national average will likely always struggle to attract and retain quality teachers. Salaries should at the very least be competitive to what instructors would make in practice in their fields of expertise.

3. Incentivize public-private partnerships between K-12 school district and university-based pathways programs and high-demand industries to improve the quality of these programs.

Public-private partnerships help correct market inefficiencies and make market-based economies more nimble and better able to address the needs of employers and employees alike.¹³¹ These partnerships are also an important part of connecting learners with opportunities in private industry and ensuring the success of career pathways programs.

State-level policy efforts to improve and expand public-private partnerships give policymakers the opportunity to support students while cultivating industry growth. Instituting these efforts at the state level would also allow policymakers to create programs that address the unique circumstances of their states and tailor programs to accommodate the specific interests of their constituents. States can look to programs like Colorado's CareerWise initiative for inspiration.¹³² Because this program was launched at the state level, business leaders, school district administrators, and public officials had platforms available to connect and work together to create a thoughtfully crafted, comprehensive program that has been extremely beneficial to Coloradans.

4. Invest in communication efforts to highlight the benefits of pathways programs.

To confront the stigma associated with career pathways programs, policymakers should invest in efforts to publicize the benefits of these programs and cultivate greater interest in them, especially among traditionally underserved communities. The field has successfully rebranded and reformed what was once called vocational education, leveraging positive messaging

and research that pushed back on long-standing doubts about the value of pathways programs. However, there is a residual hesitancy about the effectiveness of these programs.¹³³

When students and families experience pathways programs firsthand, they learn just how transformative these programs can be. Research from Advance CTE shows that parents and students engaged in career pathways programs are often more satisfied with the quality of their education and the opportunities they have for college and career.¹³⁴ In particular, they are drawn to the fact that career pathways programs provide an opportunity to gain real-world skills and can provide opportunities to earn college credits while in high school. Data has shown that focusing on pathways programs in high school leads to real, measurable benefits on high school graduation rates, postsecondary enrollment, associate's degree attainment, and higher employment rates and median earnings.¹³⁵

State-level policymakers should invest time in researching what their families want and how they can best support their needs. These leaders should infuse research-based recommendations in family engagement practices. The research conducted by Advance CTE notes, for example, that a large proportion of parents prefer to get information from a trusted source like a school counselor, and that most families are interested in career pathways programs that connect students with programs in their community.¹³⁶ Information like this can be used to craft better programs and more effectively engage stakeholders.

To attract broader demographics to pathways programs, policymakers should invest in research that explores the long-term impacts of pathways programs and identifies program strategies that focus on supporting underserved student populations. Equally important, they should use their platforms to elevate the value of pathways programs and allocate funding toward awareness via public relations campaigns. Drawing attention to the success of pathways programs can address doubts and engender further support.

5. Invest at the state and federal level in data systems and strategies to track program effectiveness and longitudinal program outcomes.

Career pathways programs lack the longitudinal data they need to demonstrate their return on investment to students, families, educators, and policymakers. State and federal policymakers are in positions to help. State leaders must invest in systems that collect better data, and require people to use those systems. Perkins V requires states to do more data collection; states should strive to do even more. State leaders can work to align collection cycles, data definitions, and targets to encourage greater collaboration and communication among programs, lessening the burden on providers and program administrators while strengthening accountability systems.

All efforts to improve data quality must be matched by capacity building among agencies to actually manage data. In 2018, the Data Quality Campaign (DQC), a nonpartisan advocacy group dedicated to improve how education data is tracked at the local, state, and national levels, created a roadmap of practical reforms that education systems could implement to improve data tracking.¹³⁷ Among their recommendations, DQC advised that stakeholders invest in efforts to build capacity among agencies using education data, to “[e]nsure that all agencies involved have the structure and staffing in place to effectively manage, analyze, and share linked data to take action to support all students.”¹³⁸



Conclusion

Career pathways programs provide opportunities for people to access careers that provide high wages in in-demand industries. State and federal policymakers should support these programs and ensure all families and students have equitable access.

Texas, Ohio, and Colorado highlight the challenges, successes, and areas of potential growth for pathways programs in these states, and they provide insight into the different ways that these programs could function better across the country. To improve career pathways programs and make them more effective and equitable in supporting students, policymakers should focus on:

- Cultivating bipartisan support among policymakers.
- Ensuring access to quality teachers and administrators.
- Growing quality public-private partnerships.
- Reducing the stigma around career pathways programs.
- Improving data on student participation and program quality.

Career pathways programs give participants access to high-quality jobs that expand opportunities, and they help people build lives filled with stability and meaning. Policymakers should do all they can to cultivate these programs and ensure that more people have access to the opportunities they afford. ✨

Appendix

COMMON CAREER PATHWAYS PROGRAMS IN THE U.S.

Program Type	Target Population	Program Description	Intended Program Purpose ¹
Career-connected learning in K-12 instruction	School-aged children	School-aged children are exposed to the working world as part of curriculum, often involving collaboration with partners from the business community who may contribute to academic content, host site visits, or serve as project mentors to students. ²	Career Exposure, Career Exploration
		In early grades, CTE programs typically consist of a few lessons or a single career-focused elective offering, or specific career-exposure experiences. However, more expansive and intensive CTE programs for younger students are gaining popularity. ³	
College-to-career connection and navigation	College students	At the secondary level, these programs include individual course offerings or series of CTE courses offered in schools, dual and concurrent enrollment programs with a career focus, specialized traditional district and charter career-focused high schools, public service leadership academies, and the International Baccalaureate Career-related Program.	Career Exposure, Career Engagement
		Supplementary services provided by counselors at higher education institutions ⁴ and/or by outside nonprofit organizations ⁵ that help students enrolled in higher education institutions build their professional networks, hone soft skills, and connect with employment opportunities.	
Postsecondary Career and Technical Education programs	Young adults, recent high school graduates	Academic education programs leading to postsecondary credentials with an emphasis on developing skills that translate directly to employment. ⁶	Career Engagement, Career Experience
Short-term credential programs	College students, recent high school graduates, young adults	College-level certificates or industry-recognized certifications, which typically require less than one year of full-time study. ⁷	Career Engagement, Career Experience

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Program Type	Target Population	Program Description	Intended Program Purpose
Bootcamps	Adults interested in career change or advancement	Intensive, short-term training programs that target learners (typically in information technology fields) to build job-ready skills and transition into entry-level roles. ⁸	Career Engagement, Career Experience
Internships	Young adults, recent high school graduates, college graduates	Time-limited jobs (paid or unpaid), often tied to a secondary or postsecondary program of study, in which participants gain exposure to a career field and develop skills needed for jobs in that field. ⁹	Career Exposure, Career Engagement, Career Experience
On-the-job training	Those currently engaged in the workforce, interested in career change or advancement	On-the-job training model in which individuals are hired into a role and paid wages in exchange for the employer providing skills training to prepare for a specific job with that employer. ¹⁰	Career Experience
Apprenticeships	Young adults, recent high school graduates, college graduates	Pathways model that combines paid on-the-job learning and formal instruction to help workers master the knowledge, skills, and competencies to prepare for a specific job. ¹¹	Career Engagement, Career Experience

Endnotes

- 1 Education Commission of the States, "50 State Comparison: Secondary Career and Technical Education 2020," <https://reports.ecs.org/comparisons/secondary-career-and-technical-education-2020>.
 - 2 Richard Fry, "Some Gender Disparities Widened in the U.S. Workforce During the Pandemic" Pew Research Center, January 14, 2022, <https://www.pewresearch.org/fact-tank/2022/01/14/some-gender-disparities-widened-in-the-u-s-workforce-during-the-pandemic/>; Valerie Wilson, "Inequities Exposed: How Covid-19 Widened Racial Inequities in Education, Health, and the Workforce," *Economic Policy Institute*, June 22, 2020, [epi.org/publication/covid-19-inequities-wilson-testimony/](https://www.epi.org/publication/covid-19-inequities-wilson-testimony/); Joe Piacentini, Harley Frazis, Peter B. Meyer, Michael Schultz, and Leo Sveikauskas, "The Impact of COVID-19 on Labor Markets and Inequality," economic working paper, Office of Survey Methods Research, U.S. Bureau of Labor Statistics, 2022, <https://www.bls.gov/osmr/research-papers/2022/ec220060.htm>; Emma Kerr and Sarah Wood, "A Look at College Tuition Growth Over 20 Years," *U.S. News & World Report*, September 13, 2022, <https://www.usnews.com/education/best-colleges/paying-for-college/articles/see-20-years-of-tuition-growth-at-national-universities>; Rafael Nam and Greg Rosalsky, "A Recession Might Be Coming, Here's What It Could Look Like," NPR, January 24, 2023, <https://www.npr.org/2023/01/24/1150319679/recession-slowdown-inflation-interest-rates-jobs-employment-economy>.
 - 3 These states were selected because they are geographically, politically, and demographically diverse, and they approach work to create career pathways in markedly different ways. While all states operate some form of career pathways programs, studying these states specifically allows us to study a cross-section of the United States.
 - 4 The recommendations for improving pathways programs were developed after reviewing the most common pathways programs, for young adults ages 16 to 24. While we believe these recommendations can apply to all programs, they were created in the context of these specific types of programs.
 - 5 "Earn While You Learn Today," fact sheet, Apprenticeship USA, updated August 2022, <https://www.apprenticeship.gov/sites/default/files/dol-industry-factsheet-careerseeker-v10.pdf>.
 - 6 Ibid.
 - 7 "Registered Apprenticeship Program," Apprenticeship USA, <https://www.apprenticeship.gov/employers/registered-apprenticeship-program>.
 - 8 Ibid.
 - 9 Jobs for the Future, a nonpartisan, nonprofit organization devoted to elevating employment options for Americans, created a comprehensive framework for developing the nuances of different types of career pathways programs. The framework may be found at <https://www.jff.org/resources/work-based-learning-framework/>.
 - 10 "2019–20 National CTE Enrollment Data Now Available," CTE Policy Watch blog, Association for Career and Technical Education, May 13, 2021, <https://ctepolicywatch.acteonline.org/2021/05/2019-20-national-cte-enrollment-data-now-available.html>.
 - 11 "Table 203.40: Enrollment in Public Elementary and Secondary Schools, by Level, Grade, and State or Jurisdiction: Fall 2021," National Center for Education Statistics, https://nces.ed.gov/programs/digest/d22/tables/dt22_203.40.asp.
 - 12 "Registered Apprenticeship National Results Fiscal Year 2020," Employment and Training Administration, U.S. Department of Labor, <https://www.dol.gov/agencies/eta/apprenticeship/about/statistics/2020>.
 - 13 Ibid.
 - 14 "Bridging the Skills Gap: Career and Technical Education in High School," U.S. Department of Education, September 2019, <https://www2.ed.gov/datastory/cte/index.html#data-story-title>.
 - 15 Elise Gould and Melat Kassa, *Young Workers Hit Hard by the COVID-19 Economy*, Economic Policy Institute, October 14, 2020, <https://www.epi.org/publication/young-workers-covid-recession/>.
 - 16 Emma Kerr and Sarah Wood, "A Look at College Tuition Growth Over 20 Years," *U.S. News & World Report*, September 13, 2022, <https://www.usnews.com/education/best-colleges/paying-for-college/articles/see-20-years-of-tuition-growth-at-national-universities>.
 - 17 "Fast Facts: Tuition Costs of Colleges and Universities," National Center for Education Statistics, <https://nces.ed.gov/fastfacts/display.asp?id=76>.
 - 18 Jessica Dickler, "Fewer Kids Are Going to College Because They Say It Costs Too Much," CNBC, March 14, 2021, <https://www.cnbc.com/2021/03/14/fewer-kids-going-to-college-because-of-cost.html>.
 - 19 Rachel Fishman, Sophie Nguyen, and Louisa Woodhouse, "Findings," in *Varying Degrees 2022: New America's Sixth Annual Survey on Higher Education*, New American, updated July 26, 2022, <https://www.newamerica.org/education-policy/reports/varying-degrees-2022/findings/>.
 - 20 Ibid.
 - 21 Ashley Edwards, Amy Mortimer, Scott Bingham, and Rucha Vankudre, *The Changing Face of Apprenticeships: New Opportunities for Employers and STARs*, Lightcast and Opportunity@Work, November 2022, <https://info.lightcast.io/hubfs/The%20Changing%20Face%20of%20Apprenticeships%202022.pdf>.
 - 22 Ibid.
 - 23 "Data and Statistics," Apprenticeship USA, <https://www.apprenticeship.gov/data-and-statistics>.
 - 24 "Explore Registered Apprenticeship," fact sheet, Apprenticeship USA, <https://www.apprenticeship.gov/sites/default/files/dol-industry-factsheet-apprenticeship101-v10.pdf>.
 - 25 "What Is a Registered Apprenticeship Program?," Apprenticeship USA, <https://www.apprenticeship.gov/employers/registered-apprenticeship-program>.
 - 26 "Career Technical Education Contributes to Job Growth and Meets Skill Needs," fact sheet, Advance CTE, https://cte.careertech.org/sites/default/files/EmployerResearchReport_JobGrowthSkillNeeds.pdf.
 - 27 Anthony P. Carnevale, Jeff Strohl, and Neil Ridley, *Good Jobs That Pay Without a BA: A State-by-State Analysis*, Georgetown University Center on Education and the Workforce, 2017, <https://goodjobsdata.org/wp-content/uploads/Good-Jobs-States.pdf>.
- 33 **Expanding Opportunity:** How States Can Accelerate the Use of Career Pathways Programs to Help Young People Access Meaningful Careers

- 28 Rachel Rosen, Mary Visher, and Katie Beal, *Career and Technical Education: Current Policy, Prominent Programs, and Evidence*, MDRC, September 2018, <https://www.mdrc.org/sites/default/files/CTE%20Paper-Final.pdf>; Mark Elliott and Anne Roder, *Escalating Gains: Project QUEST's Sectoral Strategy Pays Off*, Economic Mobility Corporation, April 2017, <https://economicmobilitycorp.org/wp-content/uploads/2018/01/Escalating-Gains-WEb.pdf>.
- 29 John Wachen, Davis Jenkins, and Michelle Van Noy, *How I-BEST Works: Findings from a Field Study of Washington State's Integrated Basic Education and Skills Training Program*, Community College Research Center, Columbia University, September 2010, <https://ccrc.tc.columbia.edu/media/k2/attachments/how-i-best-works-findings.pdf>.
- 30 Rosen et al., *Career and Technical Education*; John Fink, Davis Jenkins, and Takeshi Yanagiura, *What Happens to Students Who Take Community College 'Dual Enrollment' Courses in High School?*, Community College Research Center and National Student Clearinghouse Research Center, September 2017, <https://files.eric.ed.gov/fulltext/ED578185.pdf>.
- 31 "United States Federal Agency Career Pathways Resources and Tools," Perkins Collaborative Resource Network, <https://s3.amazonaws.com/PCRN/docs/USFederalAgencyCareerPathwaysResourcesToolsPCRN.pdf>.
- 32 H.R. 4164—Carl D. Perkins Vocational Education Act, 98th Congress (1984), <https://www.congress.gov/bill/98th-congress/house-bill/4164>.
- 33 Ibid.
- 34 Kenneth Megan and Daniel Friedman, "Bipartisan Legislation Tackles Career and Technical Education," Bipartisan Policy Center, July 31, 2018, <https://bipartisanpolicy.org/blog/bipartisan-legislation-tackles-career-and-technical-education/>.
- 35 Carl D. Perkins Career and Technical Education Act of 2006, 88-210, (2019), <https://www.govinfo.gov/content/pkg/COMPS-3096/pdf/COMPS-3096.pdf>.
- 36 Megan and Friedman, "Bipartisan Legislation Tackles Career and Technical Education," Bipartisan Policy Center, <https://bipartisanpolicy.org/blog/bipartisan-legislation-tackles-career-and-technical-education/>.
- 37 Freddie Cross, "Teacher Shortage Areas, Nationwide Listing 1990–1991 through 2016–2017," U.S. Department of Education Office of Postsecondary Education, August 2016, <https://www2.ed.gov/about/offices/list/ope/pol/tsa.pdf>.
- 38 Harry N. Boone Jr. and Deborah A. Boone, "An Assessment of Problems Faced by High School Agricultural Education Teachers," *Journal of Agricultural Education* 50, no. 1 (2009), <https://files.eric.ed.gov/fulltext/EJ867380.pdf>.
- 39 "State of CTE: CTE Instructors in Perkins V State Plans," *CTE Policy Watch* (blog), Association for Career and Technical Education, January 14, 2021, <https://ctepolicywatch.acteonline.org/2021/01/state-of-cte-cte-instructors-in-perkins-v-state-plans.html>.
- 40 Matthew Ronfeldt, Susanna Loeb, and James Wyckoff, "How Teacher Turnover Harms Student Achievement," working paper 70, National Center for Analysis of Longitudinal Data in Education Research, January 2012, <https://caldercenter.org/sites/default/files/Ronfeldt-et-al.pdf>; Ronfeldt, Loeb, and Wyckoff, "How Teacher Turnover Harms Student Achievement," *American Educational Research Journal* 50, no. 1 (2013), https://journals.sagepub.com/doi/full/10.3102/0002831212463813?casa_token=9QaPSHrT2UEAAAAA%3AU8KDL2oHRbmQ-9V_-biTkyGAWReWwQTe8edMORXqj33l3vgD8D15d1HVozOxmucTNxucjA-NdWOHRw.
- 41 "What's the Cost of Teacher Turnover?," Learning Policy Institute, September 13, 2017, <https://learningpolicyinstitute.org/product/the-cost-of-teacher-turnover>.
- 42 Staff report, "Eagle County School District Asks Residents to Take In Teachers Due to Rising Housing Prices," CBS News Colorado, September 1, 2022, <https://www.cbsnews.com/colorado/news/eagle-county-school-district-homeowner-teacher-housing-crisis/>.
- 43 "Occupational Employment and Wages, May 2021: 25-2032 Career/Technical Education Teachers, Secondary School," U.S. Bureau of Labor Statistics, 2021, [https://www.bls.gov/oes/current/oes252032.htm#\(2\);%20https://www.bls.gov/oes/current/oes_co.htm](https://www.bls.gov/oes/current/oes252032.htm#(2);%20https://www.bls.gov/oes/current/oes_co.htm).
- 44 Ibid.
- 45 Ibid.
- 46 "May 2021 State Occupational Employment and Wage Estimates: Colorado," U.S. Bureau of Labor Statistics, 2021, https://www.bls.gov/oes/current/oes_co.htm.
- 47 Thomas F. Remington and Po Yang, "Public-Private Partnerships for Skill Development in the United States, Russia, and China," *Post-Soviet Affairs* 36 (2020), <https://www.tandfonline.com/doi/abs/10.1080/1060586X.2020.1780727?journalCode=rpsa20>.
- 48 Ibid.
- 49 Ibid.
- 50 Nat Malkus, "The Evolution of Career and Technical Education: 1982–2013," American Enterprise Institute, May 2019, <https://files.eric.ed.gov/fulltext/ED596295.pdf>; Emily Hodge, Shaun Dougherty, and Carol Burris, *Tracking and the Future of Career and Technical Education: How Efforts to Connect School and Work Can Avoid the Past Mistakes of Vocational Education*, National Education Policy Center, February 2020, <https://nepc.colorado.edu/sites/default/files/publications/PB%20Hodge%20CTE%202.25.pdf>; *Brave Dialogues: A Guide to Discussing Racial Equity in Career Technical Education*, Advance CTE, <https://files.eric.ed.gov/fulltext/ED616498.pdf>; Harry J. Holzer and Sandy Baum, "Overcoming the Stigma of Voc Ed in Today's CTE," *Future Ed*, November 2, 2017, <https://www.future-ed.org/overcoming-the-stigma-of-yesterdays-voc-ed-in-todays-cte/>; Sarah Butrymowicz, Jeff Amy, and Larry Fenn, "How Career and Technical Education Shuts Out Black and Latino Students From High-Paying Professions," *The Hechinger Report*, October 22, 2020, <https://hechingerreport.org/how-career-and-technical-education-shuts-out-black-and-latino-students-from-high-paying-professions/>.
- 51 Ibid.
- 52 Thomas Gauthier, "A Renewed Examination of the Stigma Associated with Community College Career and Technical Education," *Community College Journal of Research and Practice* 44 (2020): 1–15, https://www.researchgate.net/publication/341129186_A_Renewed_Examination_of_the_Stigma_Associated_with_Community_College_Career_and_Technical_Education.
- 53 Ibid.

- 54 Robert M. Palaich, Dixie Griffin Good, and Arie van der Ploeg, "State Education Data Systems That Increase Learning and Improve Accountability," *Policy Issues* no. 16 (2004), <https://files.eric.ed.gov/fulltext/ED489522.pdf>; Katie Ash, "Fragmented Data Systems a Barrier to Better Schools, Experts Say," *Education Week*, March 11, 2013, <https://www.edweek.org/technology/fragmented-data-systems-a-barrier-to-better-schools-experts-say/2013/03>.
- 55 Colleen Moore, Kathy Reeves Bracco, and Thad Nodine, "California's Maze of Student Information: Education Data Systems Leave Critical Questions Unanswered," policy brief, part two in a series, Education Insights Center, August 2017, <https://edinsightscenter.org/Portals/0/ReportPDFs/Maze-of-Information-Brief.pdf>.
- 56 Hannah Dalporto, "Building Effective Data Strategies in Career and Technical Education," brief, MDRC, October 2019, https://www.mdrc.org/sites/default/files/CTE_Metrics_Brief_2019.pdf.
- 57 Ibid.
- 58 "Career and Technical Education: Perspectives on Program Strategies and Challenges," report to Congressional committees, U.S. Government Accountability Office, March 2022, <https://www.gao.gov/assets/gao-22-104544.pdf>.
- 59 "Profile of State Data Capacity in 2018: Statewide Longitudinal Data Systems (SLDS) Survey Descriptive Statistics," National Center for Educational Statistics, April 2021, <https://nces.ed.gov/Pubs2021/2021126/2capacity.asp>.
- 60 Ibid.
- 61 "Approved Statewide CTE Programs of Study," Texas Education Agency, <https://tea.texas.gov/academics/college-career-and-military-prep/career-and-technical-education/approved-statewide-cte-programs-of-study>.
- 62 "Perkins V," slideshow, Texas Education Agency, <https://tea.texas.gov/sites/default/files/Perkins%20V%20Overview.pptx>.
- 63 "Texas State Plan for the Strengthening Career and Technical Education for the 21st Century Act (Perkins V)," Texas Education Agency, 2020, https://s3.amazonaws.com/PCRN/docs/stateplan/TX_2020_State_Plan.pdf.
- 64 "Texas State Profile," Perkins Collaborative Resource Network, <https://cte.ed.gov/profiles/texas>.
- 65 K-12 enrollment was 5,371,586 (*Enrollment in Texas Public Schools*, Texas Education Agency, June 2021, <https://tea.texas.gov/sites/default/files/enroll-2020-21.pdf>); nongraduate program postsecondary enrollment was 1,592,892 ("Student Enrollment: How Many Students Enroll in Postsecondary Institutions in the Fall?," National Center for Education Statistics, 2021, <https://nces.ed.gov/ipeds/TrendGenerator/app/build-table/2/3?rid=1&cid=6&cidv=1%7C2%7C4%7C5%7C6%7C8%7C9%7C10%7C11%7C12%7C13%7C15%7C16%7C17%7C18%7C19%7C20%7C21%7C22%7C23%7C24%7C25%7C26%7C27%7C28%7C29%7C30%7C31%7C32%7C33%7C34%7C35%7C36%7C37%7C38%7C39%7C40%7C41%7C42%7C44%7C45%7C46%7C47%7C48%7C49%7C50%7C51%7C53%7C54%7C55%7C56>).
- 66 *Texas State Plan for the Strengthening Career and Technical Education for the 21st Century Act (Perkins V)*, November 2019, https://s3.amazonaws.com/PCRN/docs/stateplan/TX_2020_State_Plan.pdf.
- 67 CAST Schools website, <https://castschools.com/>.
- 68 "Pathways in Technology Early College High School (P-TECH)," Texas Education Agency, <https://tea.texas.gov/academics/college-career-and-military-prep/pathways-in-technology-early-college-high-school-p-tech>.
- 69 S.B. 25, Texas Legis. (2019), <https://capitol.texas.gov/tlodocs/86R/billtext/html/SB00025F.htm>.
- 70 Policy adviser, San Antonio Independent School District, September 23, 2022.
- 71 Ibid.
- 72 Career pathways administrator, San Antonio Independent School District, October 5, 2022.
- 73 "Grow Your Own," Texas Education Agency, <https://tea.texas.gov/texas-educators/educator-initiatives-and-performance/educator-initiatives/grow-your-own>.
- 74 *The State of Career Technical Education: An Analysis of States' Perkins V Priorities*, Advance CTE, October 2020, https://cte.careertech.org/sites/default/files/files/resources/State_CTE_PerkinsV_2020.pdf.
- 75 "Schools in the United States," P-TECH, <https://www.ptech.org/p-tech-network/our-schools/usa/more-schools/>.
- 76 Ibid.
- 77 Career pathways administrator, San Antonio Independent School District, October 05, 2022.
- 78 Policy adviser, San Antonio Independent School District, September 23, 2023.
- 79 Policy adviser, San Antonio Independent School District, September 23, 2023.
- 80 "New Research From Advance CTE Indicates Families in Career Technical Education More Satisfied With Education, Prepared for College," Advance CTE, April 28, 2021, <https://careertech.org/new-research-advance-cte-indicates-families-career-technical-education-more-satisfied-education>.
- 81 "Case Study: Texas," Advance CTE, 2021, https://dataquality.careertech.org/sites/default/files/case-studies/DataQualityCaseStudy1_Texas_2021.pdf.
- 82 Ibid.
- 83 Ibid.
- 84 Career pathways administrator, Dallas Independent School District, September 28, 2022.
- 85 Ibid.
- 86 "About Our Data," TPEIR, <https://texaseducationinfo.org/Home/Us/About%20Our%20Data>.
- 87 Career pathways administrator, San Antonio Independent School District, October 5, 2022.
- 88 *Expanding Career-Technical Education in Ohio*, Ohio Department of Education, July 2022, <https://education.ohio.gov/getattachment/Topics/Career-Tech/Planning-Funding-and-Accountability/Expanding-CTE-in-Ohio-White-Paper.pdf.aspx?lang=en-US>.

- 89 "Size, Scope, and Quality of Career-Technical Education Delivery," Ohio Department of Education, 2022, <https://education.ohio.gov/Topics/Career-Tech/Planning-Funding-and-Accountability/Size-Scope-and-Quality-of-Career-Technical-Educati>.
- 90 "CTE in Ohio," fact sheet, Association for Career & Technical Education, <https://www.acteonline.org/wp-content/uploads/2022/03/Ohio-CTE-Fact-Sheet-2022.pdf>.
- 91 "Ohio," Advance CTE, <https://careertech.org/ohio>.
- 92 "Area Technical Centers: Supporting Postsecondary Skill and Credential Attainment in Ohio," Advance CTE, 2021, <https://areatechnicalcenters.org/wp-content/uploads/2021/01/ATC-StateProfile-Ohio.pdf>.
- 93 Ibid.; "Understanding Joint Vocational School Districts," fact sheet, Ohio School Boards Association, <https://www.ohioschoolboards.org/sites/default/files/uploads/OSBAUnderstandigJVSDFactSheet.pdf>.
- 94 "About Us," Ohio Technical Centers, <https://ohiotechnicalcenters.com/about-us/>.
- 95 Ibid.
- 96 Chad Aldis, vice president, Thomas B. Fordham Institute, September 27, 2022.
- 97 Policymaker, Ohio Governor's Office of Workforce Transformation, October 31, 2022.
- 98 "About the Excellence Training Center," Youngstown State University, <https://ysu.edu/excellence-training-center/about>.
- 99 Jennifer Oddo, executive director, Youngstown State University Strategic Workforce Education, October 3, 2022.
- 100 Lisa Gray, president, Ohio Excels, September 28, 2022.
- 101 Ibid.
- 102 Kevin McDougal, "Ohio Board of Education Balances Collecting Data and Protecting Privacy," Thomas B. Fordham Institute, July 9, 2013, <https://fordhaminstitute.org/ohio/commentary/ohio-board-education-balances-collecting-data-and-protecting-privacy>.
- 103 Ibid.
- 104 "An Overview of Colorado K–12 Career and Technical Education," Independence Institute, July 2020, https://i2i.org/wp-content/uploads/IP-3-2020_i_web.pdf.
- 105 "Colorado Education Facts and Figures," Colorado Department of Education, <https://www.cde.state.co.us/communications/coeducationfactsandfigures>; "Career and Technical Education," Colorado Department of Education, <https://www.cde.state.co.us/postsecondary/cte>.
- 106 "CTE in Colorado," fact sheet, Association for Career & Technical Education, March 2022, <https://www.acteonline.org/wp-content/uploads/2022/03/Colorado-CTE-Fact-Sheet-2022.pdf>.
- 107 Scott Laband, president, Colorado Succeeds, October 28, 2022.
- 108 "Colorado's Educator Shortage," survey summary, Colorado Department of Education, 2021–2022, <https://www.cde.state.co.us/educatortalent/2020-21-educator-shortage-survey-summary>.
- 109 Sylvia Allegretto, "The Teacher Pay Penalty Has Hit a New High," *Economic Policy Institute*, August 16, 2022, <https://www.epi.org/publication/teacher-pay-penalty-2022/>.
- 110 Lisa Berdie, Maya Lagana, and Van Schoales, *Homeownership for Colorado Teachers: Affording the American Dream*, Keystone Policy Center, 2022, http://www.keystone.org/wp-content/uploads/2022/08/KPC-012-HomeownershipReport_fa_press-002.pdf.
- 111 Staff report, "Eagle County School District Asks Residents to Take in Teachers Due to Rising Housing Prices"; Erica Breunlin, "Desperate for Affordable Homes, Teachers in Colorado's High Country Turn to Habitat for Humanity," *The Colorado Sun*, April 22, 2022, <https://coloradosun.com/2022/04/22/colorado-teachers-affordable-housing/>; Ann Schimke, "To Hire and Keep Good Teachers as Housing Costs Rise, Colorado School Districts Take on New Role: Landlord," Chalkbeat Colorado, December 20, 2016, <https://co.chalkbeat.org/2016/12/20/21099495/to-hire-and-keep-good-teachers-as-housing-costs-rise-colorado-school-districts-take-on-new-role-land>.
- 112 Laband, Colorado Succeeds.
- 113 "Salida School District's Building Trades Program Tackles Affordable Housing Head-On," Colorado Succeeds, August 22, 2017, <https://coloradosucceeds.org/salida-school-districts-building-trades-program-tackles-affordable-housing-head-on/>.
- 114 Schimke, "To Hire and Keep Good Teachers as Housing Costs Rise, Colorado School Districts Take on New Role: Landlord," <https://co.chalkbeat.org/2016/12/20/21099495/to-hire-and-keep-good-teachers-as-housing-costs-rise-colorado-school-districts-take-on-new-role-land>.
- 115 "About CareerWise," CareerWise Colorado, <https://www.careerwisecolorado.org/en/story/>.
- 116 Remington and Yang, "Public-Private Partnerships for Skill Development in the United States, Russia, and China."
- 117 "About CareerWise," CareerWise Colorado, <https://www.careerwisecolorado.org/en/story/>.
- 118 Suzuho Shimasaki, "Health Equity and Racial and Ethnic Workforce Diversity," The Colorado Trust, 2015, https://www.coloradotrusted.org/wp-content/uploads/2015/03/CT_Workforce_Diversity_Brief_FINAL.pdf; *Gender Equity in Colorado's STEM Industries: The Case for Focused Workforce Investment*, KP Advisors, <https://www.wfco.org/file/WFCO-Gender-Equity-Report.pdf>.
- 119 "Career-Connected Learning in Colorado: A Series of Impact Briefs & Policy Solutions," Colorado Succeeds, <https://coloradosucceeds.org/impact-briefs/>.
- 120 "Colorado Education Facts and Figures," Colorado Department of Education, <https://www.cde.state.co.us/communications/coeducationfactsandfigures> (while this is only 17% of Colorado's total student population, it equates to 148,372 students with limited access to quality opportunities).
- 121 "Rural Collaboration," brief, Colorado Succeeds, https://coloradosucceeds.org/wp-content/uploads/2022/07/CS_ImpactBrief22_RuralCollab_FINAL21.pdf.
- 122 Laband, Colorado Succeeds.

- 123 Ibid.
- 124 “P-TECH,” brief, Colorado Succeeds, https://coloradosucceeds.org/wp-content/uploads/2022/07/CS_ImpactBrief22_PTECH_FINAL21.pdf.
- 125 Laband, Colorado Succeeds.
- 126 “Relevant Information to Strengthen Education (RISE),” Colorado Department of Education, <https://www.cde.state.co.us/riase>.
- 127 Mirel Herrera, “Legislative Update: Connecting Data Collection to Data Use,” Data Quality Campaign, October 11, 2022, <https://dataqualitycampaign.org/connecting-data-collection-to-data-use/>; HB22-1349, Postsecondary Student Success Data System, Colo. 74th Gen. Ass. (2022), <https://leg.colorado.gov/bills/hb22-1349>.
- 128 Sara Wilson, “Gov. Polis, State Lawmakers Unveil Colorado Workforce Development Legislation as Part of COVID-19 Recovery,” *The 74*, April 5, 2022, <https://www.the74million.org/article/gov-polis-state-lawmakers-unveil-colorado-workforce-development-legislation-as-part-of-covid-19-recovery-2/>.
- 129 Malkus, *The Evolution of Career and Technical Education*, May 2019, <https://www.aei.org/wp-content/uploads/2019/04/The-Evolution-of-Career-and-Technical-Education.pdf?x91208>.
- 130 Laband, Colorado Succeeds.
- 131 Quentin Suffren and Danielle Mezera, *Putting Career and Technical Education to Work for Students*, ExcelinEd, November 2017, https://www.excelined.org/wp-content/uploads/2017/11/ExcelinEd_PuttingCTEtoWorkforStudents.APlaybookforStatePolicymakers.November2017.FINAL_.pdf.
- 132 “About CareerWise,” CareerWise Colorado, <https://www.careerwisecolorado.org/en/story/>.
- 133 Malkus, *The Evolution of Career and Technical Education*, May 2019, <https://www.aei.org/wp-content/uploads/2019/04/The-Evolution-of-Career-and-Technical-Education.pdf?x91208>.
- 134 “The Value and Promise of Career Technical Education: Results From a National Survey of Parents and Students,” *Advance CTE*, 2017, https://cte.careertech.org/sites/default/files/files/resources/The_Value_Promise_Career_Technical_Education_2017.pdf.
- 135 “Bridging the Skills Gap,” U.S. Department of Education, <https://www2.ed.gov/datastory/cte/index.html>.
- 136 “The Value and Promise of Career Technical Education,” https://cte.careertech.org/sites/default/files/files/resources/The_Value_Promise_Career_Technical_Education_2017.pdf.
- 137 “Roadmap for K–12 and Workforce Data Linkages,” Data Quality Campaign, 2018, <https://dataqualitycam.wpenginepowered.com/wp-content/uploads/2018/09/DOC-Workforce-Linkages-Roadmap-09262018.pdf>.
- 138 Ibid.

Appendix Endnotes

- 1 “About Work-Based Learning,” Jobs for the Future, <https://www.jff.org/what-we-do/impact-stories/center-for-apprenticeship-and-work-based-learning/about-work-based-learning/>; Dan Bloom, “Transitional Jobs,” MDRC, February 2010, <https://www.mdrc.org/publication/transitional-jobs>.
- 2 “What Is Career Connected Learning?,” National Center for College and Career Transitions, <https://www.nc3t.com/who-we-are/the-promise-of-career-connected-learning/>.
- 3 “Expanding Middle School CTE to Promote Lifelong Learner Success,” *Advance CTE*, October 2018, <https://careertech.org/resource/expanding-middle-school-cte>.
- 4 “Poised to Lead: How School Counselors Can Drive College and Career Readiness,” The Education Trust, December 2011, <https://files.eric.ed.gov/fulltext/ED527908.pdf>.
- 5 Kathleen Carroll, “Closing Opportunity Gaps in High School, College, and the Workforce,” Carnegie Corporation of New York, August 23, 2021, <https://www.carnegie.org/our-work/article/closing-opportunity-gaps-high-school-college-and-workforce/>.
- 6 Cassandra Dortch, “Career and Technical Education (CTE): A Primer,” Congressional Research Service, February 10, 2014, <https://sgp.fas.org/crs/misc/R42748.pdf>.
- 7 Monique O. Ositelu, Clare McCann, and Amy Laitinen, *The Short-Term Credentials Landscape*, New America, May 2021, <https://www.luminafoundation.org/wp-content/uploads/2021/05/the-short-term-credentials-landscape.pdf>.
- 8 Kerry Hannon, “Short-Term Programs for Long-Term Success,” *The New York Times*, June 7, 2019, <https://www.nytimes.com/2019/06/07/education/learning/global-training-programs-bootcamps.html>.
- 9 “About Work-Based Learning,” Jobs for the Future, <https://www.jff.org/what-we-do/impact-stories/center-for-apprenticeship-and-work-based-learning/about-work-based-learning/>.
- 10 “Work-Based Learning Glossary,” Jobs for the Future, <https://www.jff.org/what-we-do/impact-stories/center-for-apprenticeship-and-work-based-learning/work-based-learning-glossary/>.
- 11 “About Work-Based Learning,” Jobs for the Future, <https://www.jff.org/what-we-do/impact-stories/center-for-apprenticeship-and-work-based-learning/about-work-based-learning/>.

About the Authors



LINEA KOEHLER

Linea Koehler is a senior analyst at Bellwether in the Policy and Evaluation practice area. She can be reached at linea.koehler@bellwether.org.



HAROLD HINDS

Harold Hinds is an associate partner at Bellwether in the Policy and Evaluation practice area. He can be reached at harold.hinds@bellwether.org.



NICK LEE

Nick Lee is a partner at Bellwether in the Policy and Evaluation practice area. He can be reached at nick.lee@bellwether.org.

About Bellwether

Bellwether is a national nonprofit that exists to transform education to ensure systemically marginalized young people achieve outcomes that lead to fulfilling lives and flourishing communities. Founded in 2010, we work hand in hand with education leaders and organizations to accelerate their impact, inform and influence policy and program design, and share what we learn along the way. For more, visit bellwether.org.

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