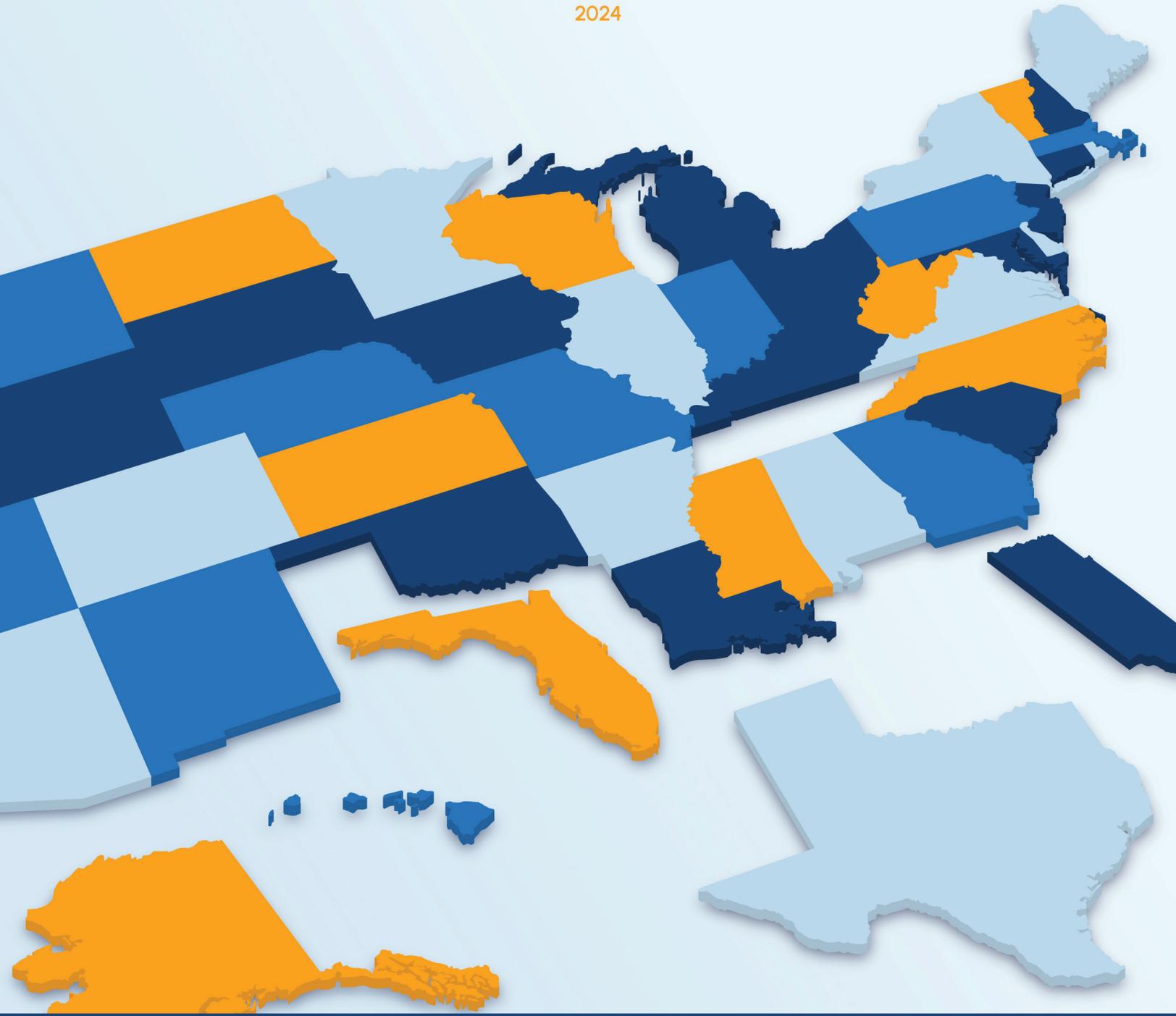


The Great Misalignment

Addressing the Mismatch between the Supply of Certificates and Associate's Degrees and the Future Demand for Workers in 565 US Labor Markets

2024



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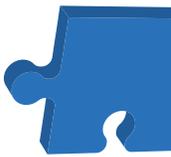


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Introduction

Los Angeles. Atlanta. Savannah. Pittsburgh. Hundreds of local labor markets fuel the American economy,¹ and each one is driven by the needs of the local area’s mix of industries and the skills of its workers. For each labor market to operate at its peak potential, these needs and skills must align. Achieving alignment requires local education and training providers to convey in-demand skills through the programs they offer; when providers fail at this task, skills gaps can manifest or grow. The result of failure is a great misalignment between credential supply and labor-market demand, specifically at the middle-skills level. In half of local labor markets nationwide, at least 50 percent of all middle-skills credentials would need to be conferred in different fields of study in order for the occupational distribution of credentials to match projected labor demand through 2031.

On one side of this great misalignment, we find middle-skills employment: jobs that require more than a high school diploma but less than a bachelor’s degree. On the other side lies the vast array of middle-skills education and training providers, which include public community colleges, private nonprofit and for-profit two-year institutions, and private training institutions such as technical, clerical, and cosmetology schools, along with some four-year colleges that offer middle-skills credentials. These providers often explicitly design their programs to serve local workforce needs, including by collaborating directly with employers to create educational offerings that match the skills demands of the local labor market.



In this report, we focus on middle-skills credentials — that is, postsecondary sub-baccalaureate certificates and associate’s degrees.² As of the 2020–21 school year, providers of these credentials numbered almost 4,800 nationwide.³ These providers were spread unevenly across the 565 local labor markets described in this report, with some markets served by dozens of providers and others served by only one.⁴ Each provider offers a specific combination of programs, credential types, and industry connections determined by the provider’s mission, its capacity, and the needs of workers and employers in the local community.

-
- 1 In this report, we define local labor markets according to commuting zones established by the US Department of Agriculture’s Economic Research Service, which has identified 709 commuting zones in the United States.
 - 2 Middle-skills jobs also employ workers with some postsecondary coursework but no degree or certificate, and middle-skills providers thus play an important role in providing short-term, noncredential opportunities for students who are not enrolled in a credential program (sometimes referred to as “skills builders”). These skills-builder students may enroll in a few courses to brush up on their skills, to stay up-to-date on developments in their occupation, or to pass recurrent industry-based certification exams or meet new licensing requirements. These course clusters are the bite-sized education and training offerings that tend to go unnoticed in the postsecondary data organized around credential completion. Much of the noncredit education paid for by workers and employers serves a similar reeducation or retraining function. Booth, *The Ones That Got Away*, 2014.
 - 3 Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2021.
 - 4 An additional 144 of the 709 total US labor markets are not served by any middle-skills providers within commuting distance by car.

The pressure on these middle-skills providers to meet community workforce needs continues to grow: the national economy is expected to create an average of 18.5 million job openings annually through 2031, and 5.8 million of these job openings each year (slightly more than 31 percent) will go to workers with an associate's degree, a certificate, or some college credit but no degree.⁵ These middle-skills workers are vital to the American economy and to their local communities. They include air traffic controllers, dental hygienists, radiation therapists, and veterinary technicians. They provide emergency and nonemergency medical services, keep our heating and air conditioning running, and maintain our telecommunications infrastructure, among many other roles and responsibilities. Without them, the economy and society as we know it would struggle to function.

When the supply of middle-skills credentials and the needs of local economies align, everyone can benefit. Employers have an easier time hiring skilled workers for the positions they need, graduates have an easier time finding work in their fields, and the economy as a whole operates more efficiently. Students who aspire to earn four-year degrees also benefit; they gain marketable skills even if they are among the many who never successfully transfer, and if they do transfer and must work while pursuing a bachelor's degree, they are better equipped to secure a job that builds on their prior education and training.

In contrast, when middle-skills credentials and economic needs don't align, everyone suffers. Employers can't find qualified workers, graduates find that they are overqualified or underprepared for available jobs, and the negative effects on the economy spill over to the community at large. While this situation is common across local labor markets in the United States, we see substantial opportunities to improve it. The great misalignment between middle-skills education and training and middle-skills jobs — and what stakeholders can do to address it — is the subject of this report.

Middle-skills credential supply is greatly misaligned with projected job demand in most labor markets across the country.

Our analysis revealed considerable misalignment between the current supply of and projected demand for middle-skills credentials in most local labor markets. In 283 of the 565 US labor markets that we examined, at least 50 percent of all middle-skills credentials would need to be conferred in different fields in order for the occupational distribution of credentials to match projected labor demand.

The extent of credentials-to-jobs misalignment varies widely across the country. In one-quarter of local labor markets, full alignment could be achieved by redistributing fewer than 42 percent of middle-skills credentials.⁶ At the other end of the spectrum, a quarter of local markets would need

5 Carnevale et al., *After Everything*, 2023.

6 Forty-two percent is the share of middle-skills credentials that would need to be redistributed to achieve full credentials-to-jobs alignment at the 25th percentile of the misalignment distribution across all local labor markets.

to redistribute more than 60 percent of middle-skills credentials to achieve full alignment. Even the best-aligned markets — which include Americus, Georgia (18 percent misalignment); Manhattan, Kansas (20 percent misalignment); and Paris, Tennessee (21 percent misalignment) — still have room for improvement.

At a national level, one major source of misalignment is the relatively high percentage of credentials that have little or no connection to a specific occupational cluster. Twenty-eight percent of all middle-skills credentials are granted in programs with no direct occupational match; the vast majority of these credentials are conferred in liberal arts, general studies, and humanities programs.⁷ To be clear, having no direct occupational match doesn't mean that these credentials have no value in the marketplace or to individuals. People may pursue these credentials for reasons other than workforce preparation, such as anticipated transfer to a four-year institution, personal edification, or personal interests and values. These are all valid reasons to pursue a college education.

At the same time, middle-skills programs can better serve students by strengthening pathways to both four-year programs *and* the workforce. Workers with middle-skills credentials in fields with no direct occupational match may experience particularly difficult transitions from school to work, even — and perhaps especially — if they planned to pursue a bachelor's degree but do not immediately transfer to a four-year college. Although most degree-seeking students at community colleges intend to earn a four-year degree,⁸ only 21 percent of those who earn a middle-skills credential ever transfer to a four-year institution.⁹ Transfer rates are higher in liberal arts, general studies, and humanities programs, with 42 percent of students who complete a certificate or associate's degree program successfully transferring to a four-year program.¹⁰ Nonetheless, most of these students are left to navigate the workforce with a middle-skills credential as their highest level of attainment. Given the risk of not making a successful transfer, middle-skills education and training providers should prepare all students for career success whether their next step is school or work.

Addressing the great misalignment will require action on multiple fronts. It will mean attracting more students to credentials that are under-enrolled relative to labor-market demand — and ensuring that those credentials lead to jobs that pay a living wage and generate a positive return on investment. It will also mean strengthening the pathways to jobs in areas of study that currently lack strong connections with the workforce, while simultaneously improving transfer outcomes across all fields of study. More education and career counseling will be needed to ensure that

7 We use the program-to-occupation (CIP-SOC) crosswalk developed by the US Bureau of Labor Statistics and the US Department of Education to identify occupations available to graduates in each program of study. According to the crosswalk, programs in liberal arts, general studies, and humanities technically align to jobs as postsecondary educators. However, fewer than 5 percent of graduates in these programs actually work in education after completing a middle-skills credential. Based on the tenuous link between these programs and work in education, we treat programs in liberal arts, general studies, and humanities as having no direct occupational match throughout our analyses in this report.

8 Jenkins and Fink, *Tracking Transfer*, 2016.

9 Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Beginning Postsecondary Students Longitudinal Study (BPS), 2012, 2014, and 2017.

10 Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Beginning Postsecondary Students Longitudinal Study (BPS), 2012, 2014, and 2017.

prospective students are fully informed about their job prospects after enrolling. And students must be directly notified about the typical labor-market outcomes associated with programs they are considering — including both the earnings that former students realize and the types of work they secure.

Our analysis provides clues about the factors that contribute to successful alignment of middle-skills supply and demand across communities, and we suggest strategies to improve alignment in local labor markets across the country.

Urban areas have higher levels of credentials-to-jobs alignment because the mix of providers grants a more diverse set of middle-skills credentials.

To minimize misalignment, we need to understand it. To that end, it's important to recognize that labor markets served by more middle-skills education and training providers tend to experience lower levels of credentials-to-jobs misalignment than those served by fewer providers. This is true even in labor markets that produce similar overall numbers of middle-skills graduates. In fact, for every 10 additional providers in a local labor market, the average level of misalignment is 3 to 4 percentage points lower. Because the number of providers is typically lower in rural areas than in urban areas, credentials-to-jobs misalignment is often higher in rural labor markets than in urban labor markets. At the extremes, the median level of credentials-to-jobs misalignment is 26 percent higher in very rural labor markets than in very urban labor markets.¹¹

The higher levels of credentials-to-jobs alignment in labor markets with more middle-skills education and training providers suggest two possible explanations:

1. **Competition from other providers leads each institution to be more responsive to local hiring needs.** In a crowded marketplace, providers that are striving to stay open for business could compete with one another by increasing their own responsiveness to all aspects of local labor-market demand. In theory, this could result in stronger alignment across the entire local labor market due to stronger alignment between individual providers and the overall middle-skills job market in the area.
2. **Complementarity among programs helps fill niches in labor-market demand.** Complementarity occurs when individual providers in the same local area prioritize programs that fill different labor-market needs and competitive niches. In these cases, each provider's postsecondary education and training offerings build upon the offerings of other local providers. In theory, this could result in stronger credentials-to-jobs alignment across the entire labor market without producing stronger alignment at each institution, as long as the

¹¹ In very rural labor markets, at least 75 percent of residents live in rural parts of the commuting zone. In very urban labor markets, at least 75 percent of residents live in urban parts of the commuting zone.

mix of credentials conferred across providers better reflects overall occupational demand than the credential supply at each individual institution.

Our analysis indicates that it is **complementarity** — through which each provider fulfills somewhat distinct labor-market demands — that drives stronger credentials-to-jobs alignment in labor markets that have more middle-skills education and training providers. Credentials-to-jobs alignment at the community level is generally greater than alignment at the institutional level, suggesting that providers achieve better alignment at the community level by pooling the supply of credentials across institutions with different but complementary strengths. In addition, the average level of misalignment at the institutional level (as opposed to at the community level) is slightly greater in labor markets served by more providers, which is the opposite of what we would expect if more competition led providers to more closely align their individual credential production with overall local demand.

Taken together, these findings suggest that colleges and other institutions in labor markets served by many providers often prioritize different programs, with different types of institutions preparing graduates for different kinds of middle-skills work. And in fact, a review of how alignment fluctuates with the mix of middle-skills providers in the local labor market supports this conclusion. Labor markets in which middle-skills credentials are delivered by a strong mix of public, for-profit, and private nonprofit institutions tend to have the highest levels of alignment. Similarly, labor markets in which middle-skills credentials are delivered by a variety of providers that primarily confer either certificates, associate's degrees, or bachelor's degrees also tend to have the highest levels of alignment. Each institution fills a different niche in the local labor market, serving the needs of the market by pooling its credential production with that of other providers rather than by achieving better institutional alignment in the face of stronger direct competition.

While increasing the number or variety of education and training providers is not a feasible goal in many local labor markets, most communities with more than one provider can nonetheless improve middle-skills credentials-to-jobs alignment by strengthening coordination and cooperation among all local providers. We suggest strategies to that end in this report.

Racial/ethnic disparities in credentials-to-jobs alignment arise from differences in program provision where people live.

Black/African American, Hispanic/Latino, and Indigenous adults are nearly as likely as white adults to hold an associate's degree but are much less likely than white adults to hold a bachelor's degree.¹² Thus, ensuring that middle-skills credentials provide strong pathways to economic opportunity through both in-demand skills and on-ramps to bachelor's degree programs supports

¹² Carnevale et al., *Learning and Earning by Degrees*, 2024; US Department of Education, Table 306.20 of the *Digest of Education Statistics*, 2022.

our postsecondary system's role in sowing the seeds of economic justice. Our analysis points to racial/ethnic gaps in access to middle-skills providers and in credentials-to-jobs alignment, with potentially detrimental economic outcomes for adults in some marginalized groups.

Access to opportunity depends in large part on how well education and training institutions serve the areas where people live, and where people live varies by race/ethnicity. Different racial/ethnic groups are dispersed across the country in areas with different levels of credentials-to-jobs alignment. Access to middle-skills credentials in high-demand occupations therefore varies across racial/ethnic groups. These differences in access to labor markets with strong credentials-to-jobs alignment are one of many resource disparities that constrain educational and economic opportunity for marginalized groups.¹³

Among working-age adults (ages 18–65), American Indian/Alaska Native adults are the major racial/ethnic group most likely to live in communities where there are no middle-skills education and training providers within commuting distance by car. In fact, they are 3 to 18 times more likely than working-age adults in other racial/ethnic groups to live in an area with no middle-skills service provider. Crucially, the lack of access to middle-skills providers reflects a systemic problem: public and private underinvestment in communities with the greatest need for opportunity.

Those American Indian/Alaska Native adults who do live in a community with at least one middle-skills provider have a relatively high likelihood (71 percent) of residing in an area with above-median credentials-to-jobs alignment. Among those with access to local middle-skills providers, the only group that experiences higher levels of alignment is Black/African American adults, 73 percent of whom live in communities with above-median credentials-to-jobs alignment.

In contrast, among working-age adults with access to at least one local middle-skills provider, Hispanic/Latino adults are the group most likely to live in places that have particularly poor credentials-to-jobs alignment. Only 58 percent of Hispanic/Latino adults with access to local middle-skills providers live in labor markets with above-median credentials-to-jobs alignment.

By and large, the racial/ethnic gaps in access to well-aligned middle-skills markets cannot be explained by factors that are observable in our data set: in fact, the alignment gaps between white and Hispanic/Latino adults and between white and Black/African American adults shrink only slightly after accounting for observable differences between local labor markets (such as the proportion of the labor market that is rural versus urban and the number of providers in operation).

Most of the variation in alignment stems instead from factors that aren't measurable in our data set. These factors likely include the extent to which local communities are coordinating efforts across various stakeholders — including government agencies, education providers, employers, and local residents. They may also relate to institutional and system-level investments in labor-market information tools, development of career pathways programs, and student participation in paid

13 Carnevale et al., *If Not Now, When?*, 2021; Carnevale et al., *Youth Policy*, 2021; Carnevale et al., *What Works*, 2023.

internships and apprenticeships with local employers. Each of these factors, individually and in combination, suggests promising avenues for improving alignment between middle-skills providers and local labor markets.

While closing alignment gaps by race/ethnicity would help improve equality of opportunity for middle-skills workers of all racial/ethnic backgrounds, it won't — by itself — level the playing field for educational and economic opportunity. Without effective safeguards to protect workers, a system in which middle-skills credentials are aligned to labor-market demands could benefit employers at the expense of workers — supplying employers with skilled labor, but failing to provide workers a living wage or opportunities for career growth. When middle-skills programs disproportionately serve marginalized racial/ethnic groups, such an outcome could deepen rather than alleviate racial/ethnic disparities in economic opportunity. To ensure that middle-skills credentials offer pathways to economic self-sufficiency in the short term, we need all middle-skills jobs to pay at least a living wage. To ensure that middle-skills credentials create opportunities for strong earnings growth over time, we need clearly articulated career ladders for entry-level middle-skills jobs and reliable transfer pathways to four-year degrees.



The great misalignment suggests great opportunity for improvement.

While levels of misalignment are high overall, it's important to recognize that perfect alignment between middle-skills programs and labor-market demand is not a realistic goal. The supply of middle-skills credentials is unlikely to exactly match the future demand for new middle-skills workers for several reasons. Students, not colleges, ultimately choose their programs of study, and they're rarely well-informed about the expected labor-market outcomes of different programs.¹⁴ More and better education and career counseling could help address this shortfall, but it would not lead to perfect alignment, in part because students also consider factors other than economic outcomes when choosing a program of study, such as how much they enjoy a subject and whether they believe they will succeed in a field.¹⁵ These personal preferences are an important driver of students' choices.

In addition, middle-skills providers play a variety of roles in their communities, and some of these roles are unrelated to preparing students for direct workforce entry. Community colleges in particular serve multiple missions, including preparing students for transfer to four-year degree

¹⁴ Baker et al., "The Effect of Labor Market Information on Community College Students' Major Choice," 2018.

¹⁵ Beffy et al., "Choosing the Field of Study in Postsecondary Education," 2012; Wiswall and Zafar, "Determinants of College Major Choice," 2015; Zafar, "How Do College Students Form Expectations?," 2011.

programs and offering noncredit programs for community enrichment and lifelong learning.¹⁶ Producing the credentials needed for success in the local labor market is a significant part of their impact, but some of their programs fulfill other equally important objectives. Moreover, students should be able to study subjects that match their values and interests, even if those areas of study lack strong occupational connections.

Aside from being unrealistic, the goal of perfect alignment is undesirable unless it includes safeguards to mandate a living wage. If achieving perfect alignment means pushing more people toward high-demand but low-paying occupations, employers could benefit at the expense of workers.

That being said, institutions that market their certificate and degree programs as offering good return on investment (ROI) should be accountable for delivering on these claims, and that accountability starts with preparing graduates for fields in which work is available. Many lawmakers and policymakers agree with this principle, and the US Department of Education's new Financial Value Transparency and Gainful Employment regulations have established measures for a minimally acceptable return on investment and for clear communication with prospective students regarding program outcomes.¹⁷ Specific program-level earnings data are the ultimate source for measuring ROI, and these data reflect whether graduates are able to earn a living wage. But the high levels of credentials-to-jobs misalignment we document suggest that many institutions may be doing students a disservice by conferring too many credentials that are not in high demand in the local labor market.

There are ample opportunities to improve credentials-to-jobs alignment within communities around the country. In the remainder of this report, we detail some of the circumstances associated with high or low levels of alignment, and we suggest promising approaches to making middle-skills education and training providers more responsive to future occupational demand in the local communities they serve. With investments in cross-institutional alignment of program delivery, better data practices, and expanded counseling and other programmatic efforts to smooth students' career pathways, we can generate substantial improvements in the delivery of postsecondary education and training that will ultimately help local communities and their residents thrive.

16 Baime and Baum, *Community Colleges*, 2016; Kisker et al., *The American Community College*, 2023.

17 For more on the Financial Value Transparency and Gainful Employment regulations, see the Conclusions and Policy Recommendations section of this report.

Part 1. The Problem of the Great Misalignment



The health of a local community's labor market depends in part on how well its education and training providers prepare workers for available jobs. The link between education and the workforce is especially important for middle-skills providers like community colleges, which aim to meet local workforce needs. But how successfully are these middle-skills providers anticipating and meeting the needs of local employers? We set out to answer this question by measuring alignment between the supply of middle-skills credentials and the projected labor-market demand for workers with those credentials within local communities across the United States.

Our analysis found substantial levels of misalignment between available middle-skills education and training opportunities and local labor-market needs. In half of local communities across the nation, at least half of all middle-skills credentials currently conferred would need to be granted in different areas of study in order for the supply to align with the projected demand for new middle-skills workers through 2031. The sources and extent of misalignment vary from labor market to labor market, but nearly all communities show room for improvement.

To be fair, it's unrealistic to expect perfect credentials-to-jobs alignment in any local labor market. Not every job opening requires a newly trained graduate, not everyone trained in a local market

stays in that market after completing a credential, and not every credential is expected to prepare students for direct entry into the workforce. When students pursuing certificates or associate's degrees do not intend to work in their college's local labor market after graduation,¹⁸ workers trained elsewhere may step in to fill the gaps. Finally, the current job market for middle-skills workers may differ from the projected job market, potentially requiring postsecondary institutions to adjust their program offerings every few years to align with local employer demand.

That being said, the impossibility of perfection does not preclude pursuing opportunities for improvement. We can identify reasonable performance benchmarks by assessing the extent of alignment across all local labor markets served by certificate-granting or associate's degree-granting institutions. Those with the highest levels of alignment (or, equivalently, those exhibiting the lowest levels of misalignment) can provide a reasonable target for successful credentials-to-jobs alignment.

The occupational distribution of certificates and associate's degrees conferred today does not align with future middle-skills job creation.

Between now and 2031, there will be 5.8 million US job openings per year available to workers with some college but no degree or with an associate's degree, comprising 31 percent of all job openings over the period.¹⁹ Blue-collar occupations and sales and office support occupations will make up half of these job opportunities, while the other half will be in community services and arts, food and personal services, education, healthcare, managerial and professional office, and STEM occupations. (For a list of the five occupations with the greatest projected demand within each occupational cluster, see Appendix B.)

With these projections in hand, we wanted to know whether middle-skills education and training providers are adequately preparing students to meet the projected demand for middle-skills workers. To find out, we used the CIP-SOC crosswalk,²⁰ a resource developed by the US Bureau of Labor Statistics and US Department of Education to identify which programs of study are preparing students for which occupations.²¹ We then used that information, combined with data from the Integrated Postsecondary Education Data System (IPEDS) on the number of certificates and associate's degrees conferred by middle-skills providers in each program of study, to determine

18 One year following associate's degree completion in a given state, 85 percent of employed individuals work in that state. The proportion working in-state decreases to 78 percent 10 years after individuals have completed their degrees. Georgetown University Center on Education and the Workforce analysis of US Census Bureau, Post-Secondary Employment Outcomes (PSEO) data set, 2023.

19 Carnevale et al., *After Everything*, 2023.

20 The CIP-SOC crosswalk matches the 6-digit Classification of Instructional Programs (CIP) codes used by the US Department of Education with the Standard Occupational Classification (SOC) codes used by the US Bureau of Labor Statistics. For more information, see Appendix A.

21 For a more detailed description of our methodology, see Appendix A.

whether the middle-skills credentials currently granted in each local labor market align with the area's future workforce needs.

We found that the current distribution of certificates and associate's degrees across programs of study differs significantly from the expected distribution of job openings for middle-skills workers. For example, although sales and office support occupations (such as retail salesperson and administrative assistant)²² will represent 27 percent of all job openings available to middle-skills workers over the next several years, only 4 percent of certificates and associate's degrees are currently conferred in programs of study aligned with these occupations. Similarly, blue-collar occupations (such as stocker, tractor-trailer driver, and maintenance worker)²³ will represent 23 percent of all middle-skills job openings over the next several years, but programs aligned with these occupations account for only 12 percent of current middle-skills credentials.

In contrast, some middle-skills credentials appear to be too plentiful. For example, 10 percent of middle-skills credentials are conferred in programs of study aligned with education occupations (such as teaching assistants and preschool teachers),²⁴ while only 3 percent of middle-skills job openings are expected to be in these occupations. This finding might seem counterintuitive given concerns about persistent shortages of teachers,²⁵ even after recognizing that K-12 teaching positions typically require four-year, not two-year, degrees.²⁶ But it's important to recognize that a mismatch in the distributions of credential supply and labor-market demand doesn't necessarily reflect an absolute shortage or a surplus of workers in any given occupation. Even a labor market with perfect credentials-to-jobs alignment could experience worker shortages if the overall number of qualified workers is lower than the number of job openings.²⁷ In other words, a labor market that is completely aligned from a distributional perspective might still need more or fewer workers across all middle-skills jobs than are currently earning related credentials.²⁸

22 The top five sales and office support occupations available to workers with middle-skills credentials are cashier, retail salesperson, customer service representative, office clerk, and secretary/administrative assistant.

23 The top five blue-collar occupations available to workers with middle-skills credentials are stocker/order filler; laborer/freight, stock, and material mover; heavy/tractor-trailer driver; maintenance/repair worker; and assembler/fabricator.

24 The top five education occupations available to workers with middle-skills credentials are teaching assistant, preschool teacher, substitute teacher, library technician, and adult education/English Language Learner instructor.

25 Balingit, "Teacher Shortages Have Gotten Worse," 2023.

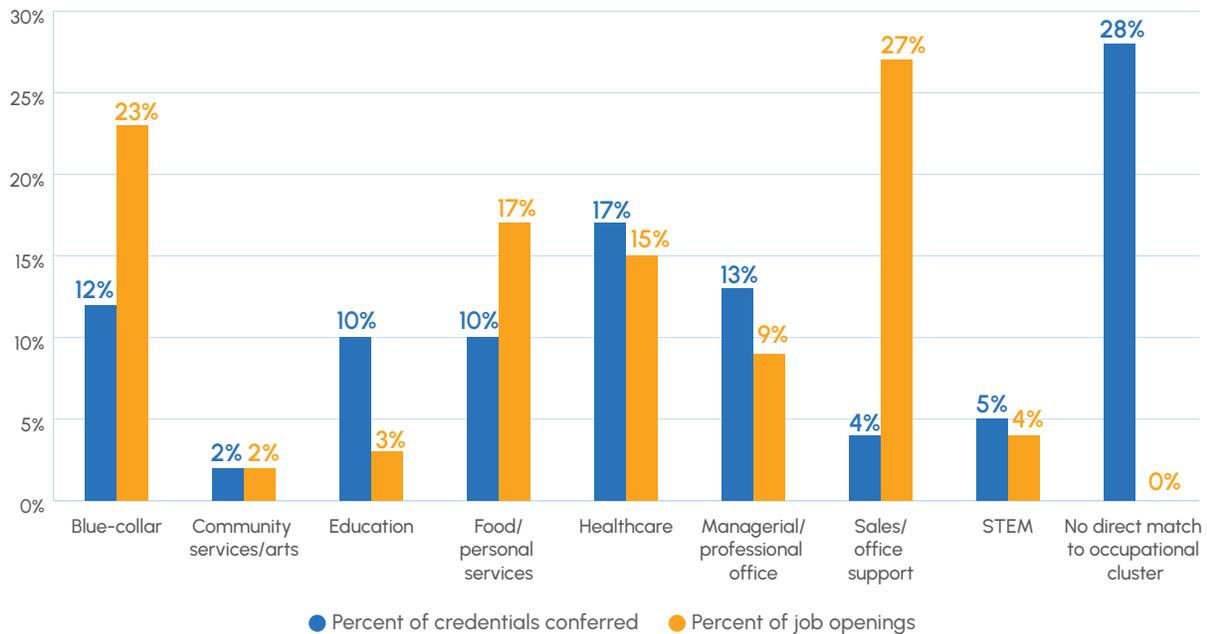
26 US Department of Education, Table 209.20 of the *Digest of Education Statistics*, 2023.

27 In fact, it is likely that middle-skills providers nationwide are producing too few graduates relative to the overall projected demand for middle-skills workers. Between 2019 and 2021, middle-skills providers granted 2 million certificates and associate's degrees each year, which is far less than the 5.8 million projected annual job openings available to middle-skills workers through 2031. Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019-21; Carnevale et al., *After Everything*, 2023.

28 In this report, our analysis of labor-market alignment compares the distributions of supply and demand for middle-skills workers across occupational clusters, rather than absolute credential counts and projected new job openings. See section 4 of Appendix A for further details.

One especially significant source of misalignment is the 28 percent of certificates and associate’s degrees granted in programs with no direct occupational match. These include credentials in liberal arts, general studies, and humanities, which collectively represent 26 percent of all certificates and associate’s degrees conferred – and more than 90 percent of credentials with no direct occupational match (Figure 1).²⁹

Figure 1. More than one-quarter of all middle-skills credentials are conferred in programs of study that do not have a direct occupational match.



Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.
 Note: Values may not sum to 100 percent due to rounding.

The concentration of middle-skills credentials in liberal arts, general studies, and humanities programs may cause some concern because these fields offer limited labor-market returns in the initial years after completion.³⁰ At the same time, these programs are better than the average middle-skills program at providing pathways to bachelor’s degree programs: approximately 42 percent of certificate and associate’s degree completers in liberal arts, general studies, and humanities transfer to four-year institutions within six years, compared with 21 percent

29 According to the CIP-SOC crosswalk, programs in liberal arts, general studies, and humanities technically align to jobs as postsecondary educators. However, fewer than 5 percent of graduates in these programs actually work in education after completing a middle-skills credential. Based on the tenuous link between these programs and work in education, we treat programs in liberal arts, general studies, and humanities as having no direct occupational match throughout our analyses in this report.

30 Bahr et al., “Labor Market Returns to Community College Awards,” 2015; Jepsen et al., “The Labor-Market Returns to Community College Degrees, Diplomas, and Certificates,” 2014.

of certificate and associate's degree completers overall.³¹ For students hoping to complete a bachelor's degree, then, these programs may increase their chances of doing so.

Nevertheless, students completing liberal arts, general studies, and humanities programs may need additional education or on-the-job experience to achieve a stronger payoff in the labor market. Connectivity to the labor market is of particular concern for the 58 percent of liberal arts, general studies, and humanities graduates who do not successfully transfer to a four-year program. To maximize their options, these graduates need both better transfer pathways and better preparation for middle-skills jobs. We discuss the need to strengthen transfer pathways, along with ways to improve pathways from liberal arts, general studies, and humanities programs to in-demand jobs, in the conclusion of this report.

Alignment between the current supply and the projected demand for new middle-skills credentials varies considerably across local labor markets.

The extent of middle-skills misalignment at the national level reflects tremendous misalignment where it matters most — across the nation's local labor markets.³² However, the extent of misalignment varies widely from one local labor market to the next among the 565 markets with at least one middle-skills credential provider. While the median level of misalignment in these local labor markets is 50 percent, one-quarter of local labor markets would need to redistribute up to 42 percent of the middle-skills credentials conferred locally to align the distribution of credentials with the distribution of projected job openings, while another one-quarter would need to redistribute more than 60 percent of middle-skills credentials.³³ Misalignment tends to be greater at the associate's degree level than at the certificate level,³⁴ but it varies considerably across local labor markets at both credential levels (Figure 2).



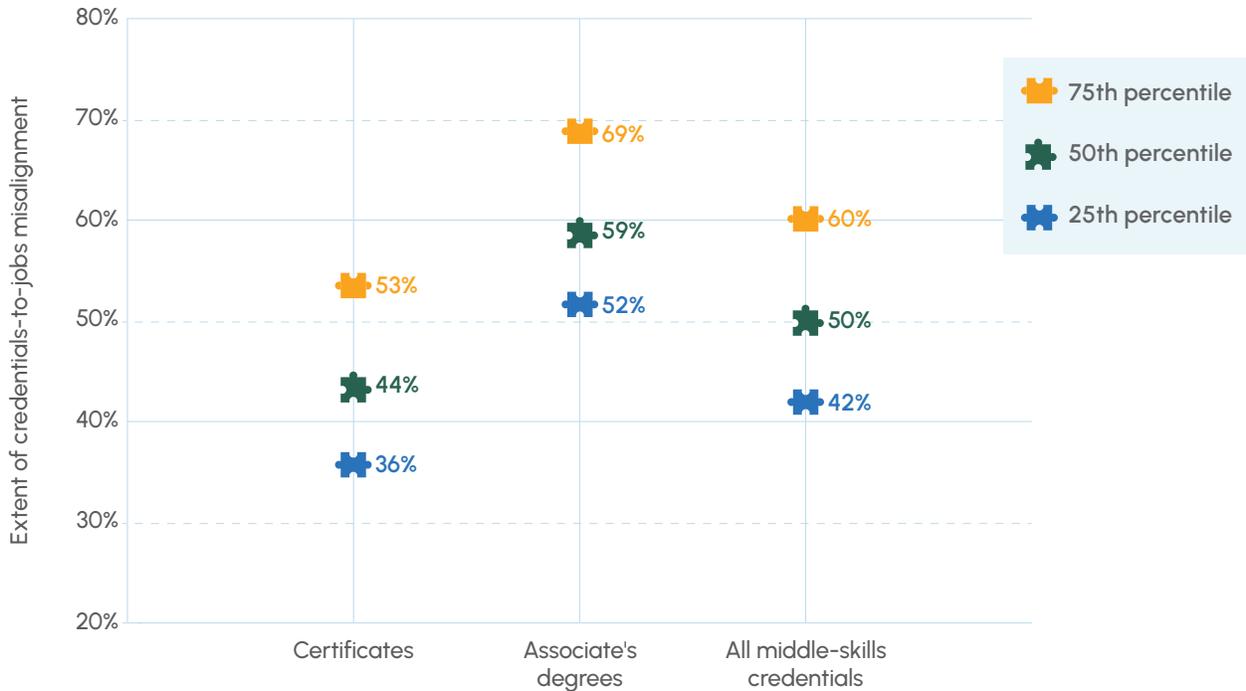
31 Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Beginning Postsecondary Students Longitudinal Study (BPS), 2012, 2014, and 2017.

32 We define local labor markets using commuting zone boundaries, which are groupings of counties developed by the Economic Research Service of the US Department of Agriculture based on common commuting patterns identified from US Census Bureau commuting data.

33 These percentages respectively represent the upper bound of the bottom quartile and the lower bound of the top quartile of the misalignment distribution across local labor markets. Within these quartiles, the average level of misalignment is 36 percent and 73 percent, respectively.

34 This may be for two reasons. The vocational focus and experiential learning component of many certificate programs create strong opportunities to connect with local employers, which may allow certificate programs to be more responsive to local labor-market conditions than associate's degree programs. In addition, liberal arts, general studies, and humanities credentials account for a much larger share of associate's degrees than certificates (39 percent versus 11 percent), leading to an extreme oversupply of associate's degrees in programs with no direct occupational match.

Figure 2. The proportion of middle-skills credentials requiring redistribution to achieve full credentials-to-jobs alignment is 42 percent at the 25th percentile and 60 percent at the 75th percentile of the misalignment distribution across all local labor markets.

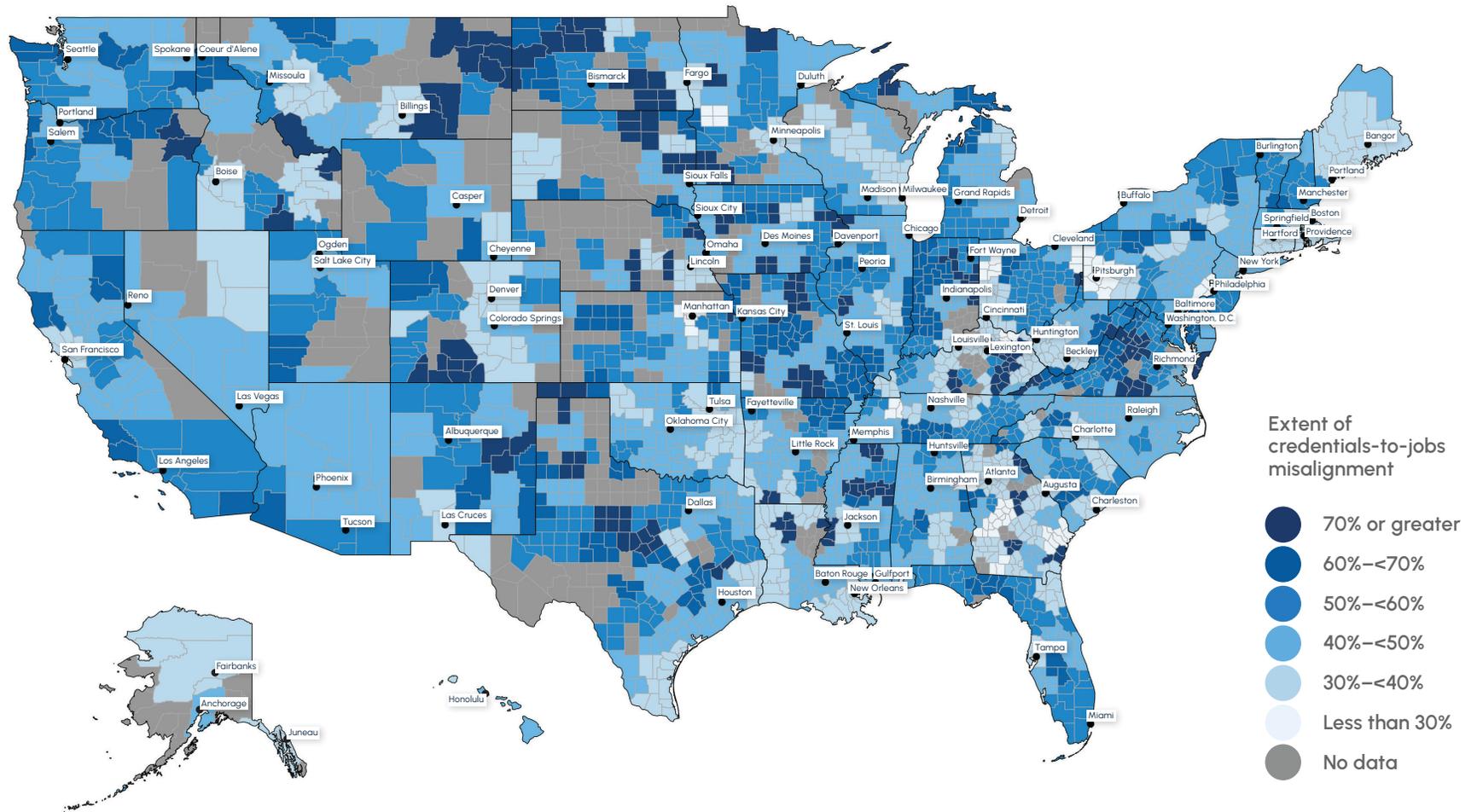


Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Local labor markets within the same state often exhibit varying degrees of alignment between the current supply and anticipated demand for middle-skills workers. In fact, we find no clear patterns of similar alignment levels even when looking at labor markets within the same region of the country (Figure 3). Nevertheless, certain local labor markets do achieve significantly better alignment than others that are similar in population size and level of urbanicity.

For example, the level of credentials-to-jobs misalignment is more than 70 percent higher in Los Angeles than in Atlanta (53 percent versus 31 percent). Part of this disparity can be attributed to the share of credentials conferred in each labor market in programs with no direct occupational match, which is twice as high in Los Angeles (36 percent) as in Atlanta (18 percent). And unlike Los Angeles, Atlanta has near-perfect alignment between the credential supply and the demand for middle-skills jobs in food and personal services, healthcare, and managerial and professional office occupations. Atlanta also has much stronger middle-skills alignment than Los Angeles with respect to blue-collar occupations, while both metro areas exhibit similar levels of middle-skills misalignment with respect to employment in education, sales and office support, and STEM occupations (Table 1).

Figure 3. The proportion of middle-skills credentials that would need to be redistributed across programs of study to align with local demand ranges from around 20 percent in the most-aligned local labor markets to more than 70 percent in the least-aligned markets.



Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.



How well do middle-skills credentials align with workforce needs in your local labor market?

Visit our online searchable tool to assess your local labor market's credentials-to-jobs alignment and to identify well-aligned labor markets that could serve as models to emulate:

cew.georgetown.edu/GreatMisalignment



Table 1. The extent of middle-skills credentials-to-jobs misalignment is far more severe in Los Angeles than in Atlanta.

Commuting zone	Extent of credentials-to-jobs misalignment	Number of providers
Atlanta, GA	31%	56
Occupational cluster	Percent of job openings	Percent of credentials conferred
Blue-collar	22%	17%
Community services and arts	2%	5%
Education	3%	11%
Food and personal services	14%	14%
Healthcare	12%	13%
Managerial and professional office	13%	12%
Sales and office support	29%	5%
STEM	5%	6%
No match		18%
Total	100%	100%

Commuting zone	Extent of credentials-to-jobs misalignment	Number of providers
Los Angeles, CA	53%	246
Occupational cluster	Percent of job openings	Percent of credentials conferred
Blue-collar	20%	5%
Community services and arts	4%	3%
Education	3%	12%
Food and personal services	17%	10%
Healthcare	17%	10%
Managerial and professional office	9%	18%
Sales and office support	27%	4%
STEM	3%	3%
No match		36%
Total	100%	100%

Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: Values may not sum to 100 percent due to rounding.

Opportunities to improve alignment abound. Communities experiencing high levels of misalignment can and should invest in efforts to reach alignment levels similar to the most-aligned communities. Of the top 10 most-aligned communities, four are found in Georgia, and the rest are scattered around the South, the Northeast, and the Midwest (Table 2).

Table 2. Four of the top 10 most-aligned local labor markets are located in Georgia.

Commuting zone	Overall extent of credentials-to-jobs misalignment	Extent of certificates-to-jobs misalignment	Extent of associate's degrees-to-jobs misalignment
1. Americus, GA	18.2%	15.1%	37.8%
2. Manhattan, KS	20.1%	20.8%	33.6%
3. Paris, TN	20.9%	26.2%	57.8%
4. Savannah, GA	23.0%	26.1%	41.6%
5. Atlanta-Sandy Springs-Marietta, GA	24.7%	29.5%	45.4%
6. Youngstown-Warren-Boardman, OH-PA	28.0%	28.0%	35.0%
7. Moultrie-Thomasville, GA	28.3%	25.2%	52.4%
8. Pittsburgh, PA	28.8%	26.1%	35.6%
9. Alexandria, MN	28.9%	38.0%	37.7%
10. Maysville, KY	28.9%	26.1%	59.1%

Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

One purpose of this report is to help improve alignment between local labor-market needs and the credentials that students earn in those markets. In the next section, we focus on identifying commonalities across local labor markets that have similar levels of alignment. Efforts at improving alignment will not be successful, however, if they don't take into account factors that we are not able to address because of the limitations of our data set, such as institutional and system-level investments in labor-market information tools,³⁵ development of career pathways programs,³⁶ student participation in paid internships and apprenticeships with local employers,³⁷ and a broader culture of coordination between local governments, education providers, and the business community.³⁸

35 Van Noy et al., *How Colleges and Universities Are Using Labor Market Information (LMI)*, 2023.

36 Cotner et al., *Designing and Delivering Career Pathways at Community Colleges*, 2021; Strawn et al., *New Insights on Career Pathways*, 2021.

37 Reed et al., *An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States*, 2012; Tu, "What Can We Learn from Longitudinal Studies on the Impacts of College Internships?," 2022.

38 Cleary et al., "Towards a New Understanding of Labor Market Alignment," 2017.

Further, policymakers and college administrators could learn from in-depth case studies of education and training providers.³⁹ They could also learn from engaging with their counterparts in other areas of the country to identify effective strategies that they can adapt to their own communities. With these efforts, providers of middle-skills credentials can make their program offerings more responsive to local employer demand – improving outcomes for students and for local economies alike.



³⁹ Two recently released case studies are Kerrigan et al., *Emerging Insights into the Use of Labor Market Information in Postsecondary Education*, 2023; and Schwartz and Lipson, *America’s Hidden Economic Engines*, 2023.

Part 2. The Urban-Rural Divide in Credentials-to-Jobs Alignment



Credentials-to-jobs misalignment is typically greater in rural areas than in urban areas, although a fair amount of variation exists across both urban and rural labor markets. A key factor contributing to the urban-rural divide is the number of middle-skills providers within a local area. Local labor markets served by more providers generally have higher levels of alignment, and urban areas tend to have more providers than rural areas. In fact, the association between the number of providers and the level of credentials-to-jobs alignment captures a broader structural difference between labor markets with low versus high levels of alignment. Even in predominantly urban or predominantly rural areas, labor markets served by more providers generally exhibit higher levels of alignment than those served by fewer providers.

Higher levels of alignment appear to arise from complementarity, when institutions of various types offer a variety of different credentials within the same local labor market. In local labor markets with multiple providers, complementarity plays a more significant role than direct competition across all institutions in aligning the production of certificates and associate's degrees with future occupational demand. In most labor markets, the opportunity for providers to further complement the work of other local education and training providers is considerable. As we discuss in this report's conclusion, institutions could collectively become more aligned with local employers' hiring needs by better coordinating their program offerings with one another.



The supply of middle-skills credentials is generally more aligned to local labor demand in urban areas than in rural areas.

Across the country, nearly all of the areas with the highest levels of misalignment are rural, while many of the areas with the lowest levels of misalignment surround large cities.

In Michigan, for example, the difference in credentials-to-jobs alignment is stark between the set of providers serving the Detroit metro area and the single middle-skills provider, North Central Michigan College, serving the sparsely populated Charlevoix, Cheboygan, and Emmet Counties some 275 miles to the northwest. The 51 institutions in and around Detroit would need to collectively redistribute 44 percent of the certificates and associate's degrees granted across programs of study to achieve perfect alignment with future occupational demand in the area. In contrast, North Central Michigan College would need to redistribute almost two-thirds (65 percent) of the middle-skills credentials it grants to achieve perfect alignment with future local occupational demand.⁴⁰

Consistent with our findings at the national level, the proportion of credentials conferred in programs with no direct occupational match explains much of the difference in alignment between these local labor markets. In Detroit, 34 percent of all certificates and associate's degrees are conferred in programs with no direct occupational match, compared with 57 percent in the Charlevoix, Cheboygan, and Emmet Counties area. As a result, Detroit experiences greater credentials-to-jobs alignment in its labor market, including in food and personal services occupations and blue-collar occupations (Table 3).

40 Readers can explore the extent of credentials-to-jobs misalignment in each of the 565 labor markets with at least one local middle-skills provider at cew.georgetown.edu/GreatMisalignment.

Table 3. The rural labor market of Charlevoix, Cheboygan, and Emmet Counties in Michigan experiences almost 1.5 times more middle-skills credentials-to-jobs misalignment than metro Detroit.

Commuting zone	Extent of credentials-to-jobs misalignment	Number of providers	Percent rural
Detroit, MI	44%	51	8%
Occupational cluster	Percent of job openings	Percent of credentials conferred	
Blue-collar	26%	9%	
Community services and arts	2%	2%	
Education	2%	6%	
Food and personal services	14%	12%	
Healthcare	15%	20%	
Managerial and professional office	9%	9%	
Sales and office support	27%	2%	
STEM	6%	7%	
No match		34%	
Total	100%	100%	

Commuting zone	Extent of credentials-to-jobs misalignment	Number of providers	Percent rural
Charlevoix, Cheboygan, and Emmet Counties, MI	65%	1	70%
Occupational cluster	Percent of job openings	Percent of credentials conferred	
Blue-collar	29%	3%	
Community services and arts	2%	1%	
Education	2%	6%	
Food and personal services	17%	2%	
Healthcare	12%	14%	
Managerial and professional office	9%	10%	
Sales and office support	28%	6%	
STEM	1%	1%	
No match		57%	
Total	100%	100%	

Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

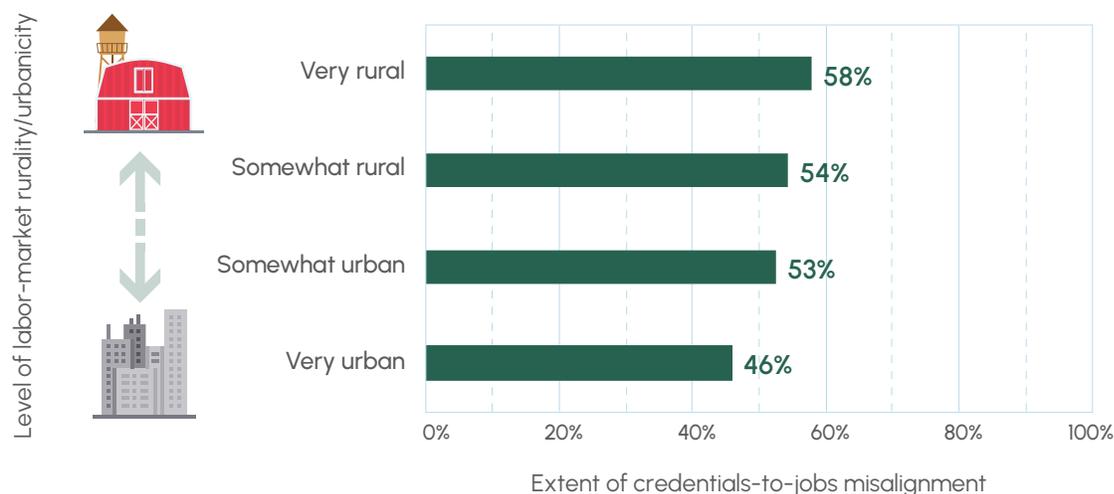
Note: Values may not sum to 100 percent due to rounding.

The contrast in alignment between Detroit and the Charlevoix, Cheboygan, and Emmet Counties area is characteristic of the urban-rural divide in credentials-to-jobs alignment nationwide. On average throughout the country, providers in very rural labor markets would need to redistribute 58 percent of the middle-skills credentials they confer in order to fully align their credential production with future occupational demand, compared with 46 percent for providers in very urban labor markets.⁴¹ Labor markets with a more balanced mix of urban and rural populations exhibit similar levels of misalignment on average (Figure 4).⁴²

41 We define very rural and very urban labor markets as those where at least three-quarters of residents live in rural and urban parts of the commuting zone, respectively. We used 2020 Census population counts by county and urbanicity from the US Census Bureau to determine the proportion of the population residing in urban versus rural areas within each labor market.

42 We define more balanced labor markets as those where at least one-quarter of residents live in rural areas and at least one-quarter live in urban areas.

Figure 4. The average level of credentials-to-jobs misalignment nationwide is 12 percentage points greater in very rural labor markets than in very urban labor markets.



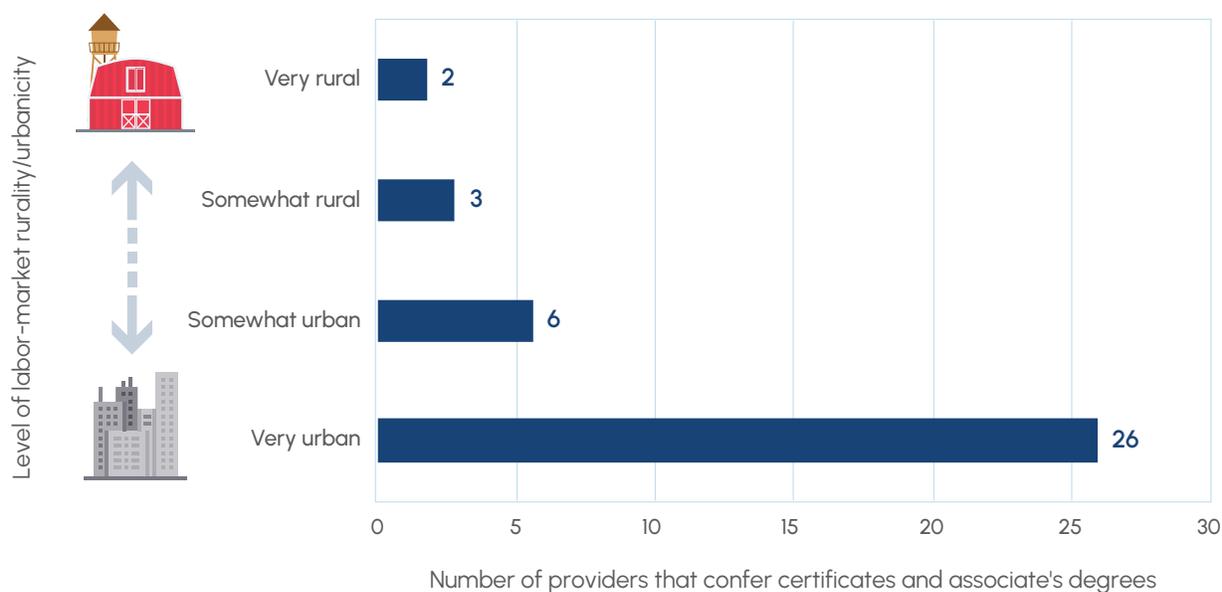
Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: Very rural = at least 75 percent of residents live in rural parts of the local labor market; somewhat rural = at least half, but less than 75 percent of residents live in rural areas; somewhat urban = at least half, but less than 75 percent of residents live in urban areas; very urban = at least 75 percent of residents live in urban parts of the local labor market.

Labor markets served by many middle-skills providers generally exhibit higher levels of credentials-to-jobs alignment than those served by few providers.

On average, very rural labor markets are served by two providers offering middle-skills programs, compared with an average of 26 providers in very urban labor markets. Somewhat rural and somewhat urban communities are served by a similar number of institutions, ranging from three to six on average depending on the exact urban-rural composition of the local labor market (Figure 5).

Figure 5. The average number of providers offering middle-skills programs is 13 times greater in very urban labor markets than in very rural labor markets.



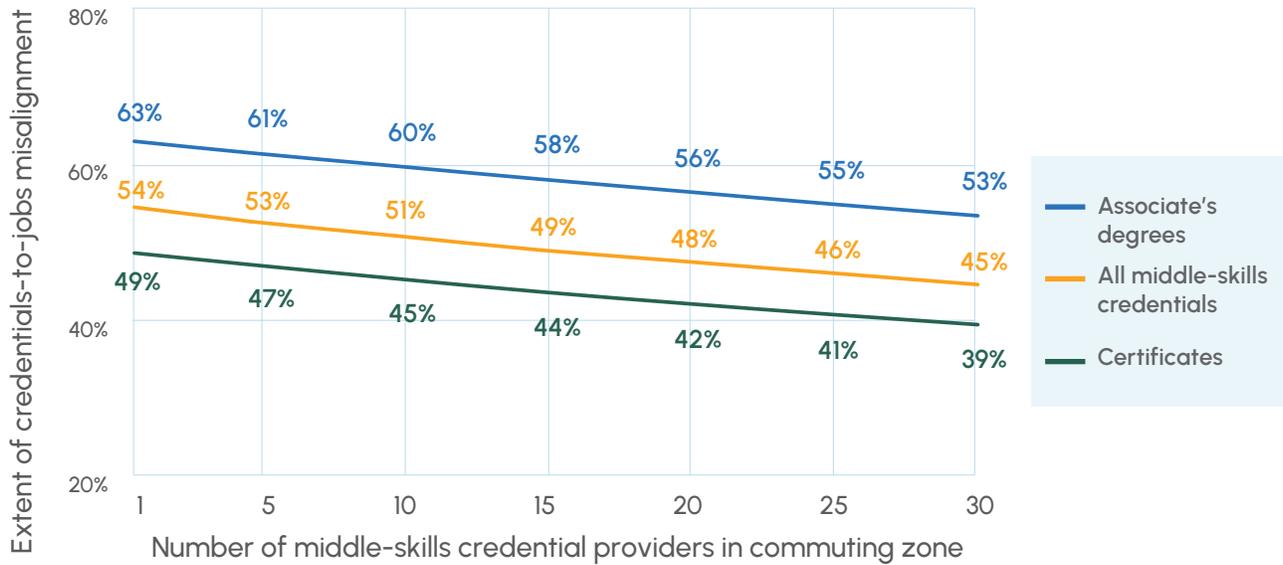
Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: Very rural = at least 75 percent of residents live in rural parts of the local labor market; somewhat rural = at least half, but less than 75 percent of residents live in rural areas; somewhat urban = at least half, but less than 75 percent of residents live in urban areas; very urban = at least 75 percent of residents live in urban parts of the local labor market.

The difference in the number of middle-skills providers between very urban and very rural areas accounts for most of the urban-rural divide in credentials-to-jobs alignment. The average alignment difference between very urban and very rural labor markets decreases from 12 percentage points to 5 percentage points after adjusting for the number of providers in each labor market. Thus, the average difference in the number of providers serving very urban versus very rural labor markets explains almost 60 percent of the urban-rural divide in credentials-to-jobs alignment.

This relationship — between the number of providers in operation and the level of credentials-to-jobs alignment — also explains some of the alignment differences across communities with similar urban-rural compositions. For every 10 additional providers serving a local labor market, the average level of misalignment is 3 to 4 percentage points lower, even after accounting for the urban-rural composition and the total number of middle-skills credentials conferred in each labor market (Figure 6).

Figure 6. The average level of credentials-to-jobs misalignment falls steadily as the number of providers rises.



Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: These results are predicted values from regression analyses of misalignment at the local labor-market level on the number of providers in operation, total number of certificates and associate's degrees conferred from 2019 to 2021, and percent of the population residing in rural areas. The regressions include first-order and second-order terms for the number of providers in operation, allowing for the relationship between the number of providers and level of misalignment to be nonlinear.

Alignment improves when multiple postsecondary institutions serve a labor market because each institution's credential production complements that of other local institutions.

In theory, labor markets served by many colleges and training centers that offer associate's degrees and certificate programs could achieve greater credentials-to-jobs alignment than markets served by few of these providers through two avenues: (1) the set of institutions within a labor market could compete directly for students by offering similar menus of programs, or (2) these institutions could try to fill different niches by offering programs that complement those of other local providers. Our analysis indicates that complementarity plays a bigger role than direct competition in improving credentials-to-jobs alignment.

Direct Competition

Institutions in close proximity often compete for the same students,⁴³ and one potential consequence of this is head-to-head competition across all programs. In this scenario, greater competition would drive every institution to be more responsive to the full range of labor-market needs in the community. This would result in each individual provider supplying an array of middle-skills credentials that more closely aligns with the full range of future occupational needs in the labor market than it would have otherwise produced in a less competitive market.

If providers became more individually responsive to labor-market demand in the face of stiffer competition, we would expect *each institution's* credentials-to-jobs misalignment to fall, in addition to the overall level of misalignment in the local labor market, as the number of providers in the area rises. To the contrary, when we compare misalignment at the individual institutional level across local labor markets with different numbers of providers, we find that the extent of misalignment at the institutional level rises slightly as the number of providers rises. For instance, the expected level of misalignment for an institution with no local competitors is 69 percent, while the expected level for an institution that operates alongside 25 other institutions is 72 percent.

Furthermore, credentials-to-jobs misalignment at the institutional level is not lower in labor markets served by a more balanced mix of public community college, for-profit, and private nonprofit institutions, as we would expect it to be if providers increased their individual labor-market responsiveness due to greater direct competition across all programs. Therefore, even though institutions in crowded markets tend to compete for the same students, direct competition across programs does not appear to explain why labor markets served by many providers experience greater alignment than those served by few providers.

Complementarity

In lieu of direct competition, providers in close proximity could improve credentials-to-jobs alignment in the local labor market by each prioritizing programs that align with distinct rather than overlapping occupations. With such differentiation, each institution's supply of middle-skills credentials could better complement the supply of other local institutions.

Indeed, institutions often do differentiate themselves in this manner: Sometimes officials at the state or system level provide oversight to ensure that local institutions don't replicate one another's efforts. Other times differentiation among providers results from institutional actions (whether strategic or incidental) and student stratification across local providers. Regardless of the reason, such differentiation is common across most local labor markets. It is perhaps best illustrated by the fact that the occupational distribution of credentials granted by each institution is somewhat distinct across most providers in the same labor market. In labor markets served by more than one

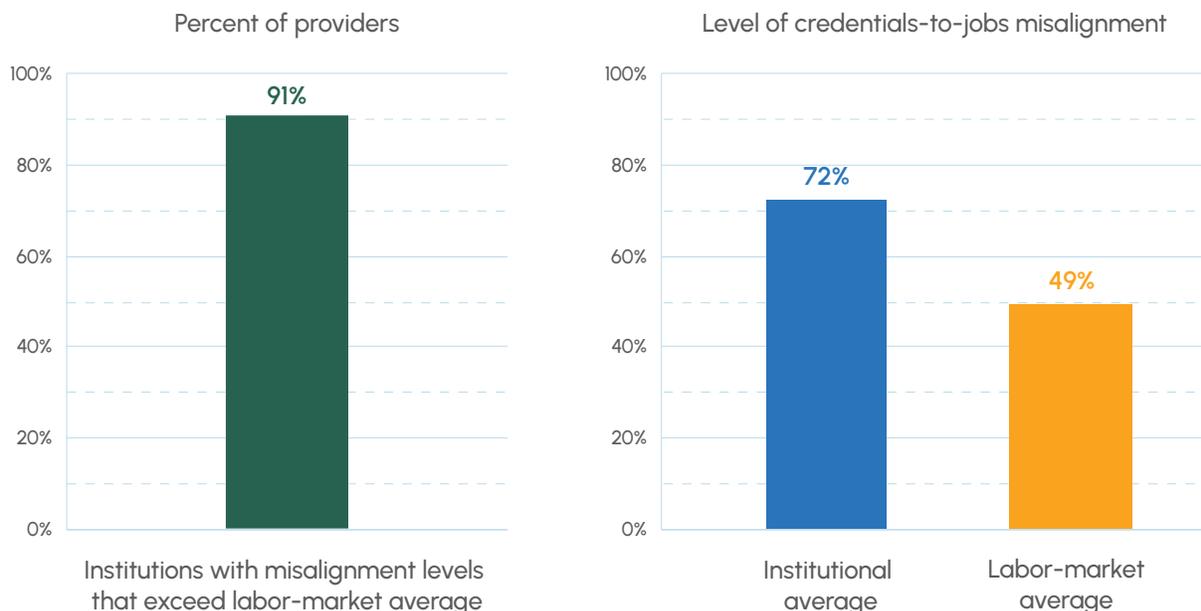
43 Cellini et al., "Where Do Students Go When For-Profit Colleges Lose Federal Aid?," 2020; Soliz, "The Effects of the Expansion of For-Profit Colleges on Student Enrollments and Outcomes at Community Colleges," 2018.

provider, the median share of middle-skills credentials that each institution would need to grant in different areas of study to achieve the same program distribution across all local providers is 55 percent.

This differentiation leads to considerable misalignment between each individual provider's supply of credentials and local labor-market demand. In labor markets served by more than one provider, 72 percent of the middle-skills credentials conferred by any individual institution, on average, require redistribution to fully align with future occupational demand. This level of misalignment is almost 50 percent greater than the labor-market average (49 percent), and more than 90 percent of providers exhibit higher levels of misalignment at the institutional level than in the labor market as a whole (Figure 7). Credentials-to-jobs misalignment among individual providers can be a strength, however, if the providers in a local labor market are misaligned in different ways.

Thus, labor markets with many providers typically achieve greater credentials-to-jobs alignment than those with few providers. They accomplish this alignment by pooling credential production across many institutions that complement one another through breadth of delivery rather than by creating direct competition among institutions that tend to prioritize similar programs to the same extent.

Figure 7. On average, middle-skills credentials-to-jobs misalignment is almost 50 percent greater at the institutional level than at the local labor-market level.



Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: The sample is restricted to labor markets served by two or more institutions.

Alignment improves with a greater mix of institutions, as defined by both institutional control and primary level of credential conferred.

To further investigate the role of institutional complementarity in credentials-to-jobs alignment, we examined how alignment varies with the mix of credentials conferred by providers with different types of institutional control. We explored this because public institutions tend to confer middle-skills credentials aligned with different occupations than for-profit and private nonprofit institutions. Next, we examined how alignment varies with the mix of middle-skills credentials granted by institutions that primarily offer different levels of credentials (certificates, associate's degrees, or bachelor's degrees). Institutions that prioritize different credential levels also tend to offer different types of middle-skills programs.⁴⁴



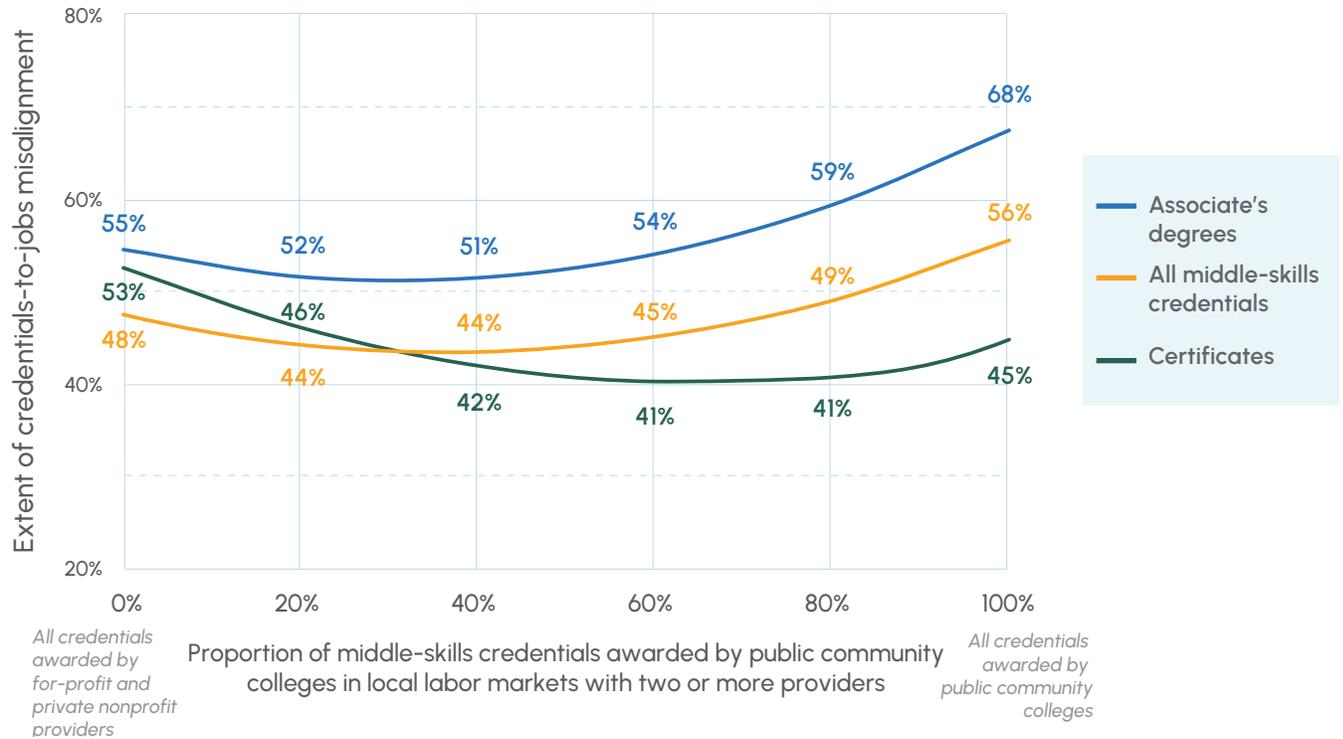
In labor markets with multiple providers, credentials-to-jobs misalignment is lowest when approximately 40 percent of middle-skills credentials are conferred by public community colleges and the other 60 percent are conferred by for-profit and private nonprofit institutions.⁴⁵ In a labor market with this institutional mix, 44 percent of middle-skills credentials are expected to require redistribution across programs of study to fully align with future occupational demand. In contrast, labor markets not served by any public community colleges are expected to require 48 percent of credentials to be redistributed, while labor markets served exclusively by public community colleges are expected to require 56 percent of credentials to be redistributed (Figure 8).⁴⁶

44 For instance, the proportion of middle-skills credentials granted in fields aligned with food and personal services occupations is six times greater among providers that primarily confer certificates than among providers that primarily confer associate's degrees (42 percent versus 7 percent). Likewise, the proportion of middle-skills credentials granted in healthcare-aligned fields is much greater among for-profit and private nonprofit institutions than among public community colleges (33 percent and 26 percent, respectively, versus 14 percent). We list the full distribution of middle-skills credentials granted by institutional control and by primary level of credential conferred in Appendix B.

45 Ninety-six percent of middle-skills credentials are granted by public (80 percent) or for-profit (16 percent) institutions. We grouped private nonprofit institutions with for-profit institutions in our analysis due to their small contribution to the supply of middle-skills credentials in most local labor markets. This allowed us to examine the relationship between credentials-to-jobs alignment and the concentration of public versus private/for-profit institutions in a local labor market.

46 In labor markets served by multiple providers, public community colleges grant 59 percent of middle-skills credentials on average. Nineteen percent of labor markets with multiple providers are not served by any public community colleges, while 5 percent are served exclusively by such institutions.

Figure 8. Labor markets with a mix of public community colleges and for-profit or private nonprofit institutions exhibit the lowest levels of credentials-to-jobs misalignment.

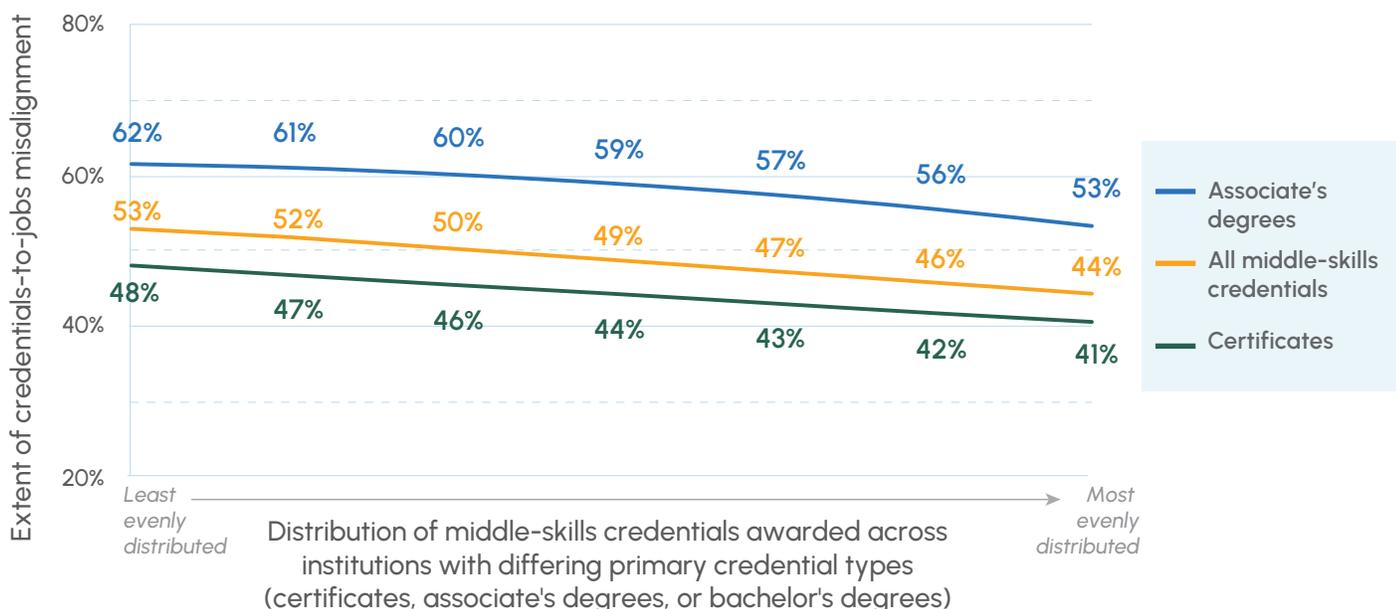


Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: The analysis covers labor markets served by two or more institutions. These results are predicted values from regressions of misalignment at the local labor-market level on the proportion of middle-skills credentials conferred by public community colleges, the proportion of credentials conferred by less-than-two-year institutions, the proportion of credentials conferred by four-year institutions, and the total number of providers. The regressions include first-order and second-order terms for the proportion of public community colleges in operation, allowing for a nonlinear relationship between this compositional characteristic and the level of labor-market misalignment.

Credentials-to-jobs alignment is also strongest when middle-skills education and training are delivered by a mix of institutions primarily conferring certificates, associate's degrees, or bachelor's degrees. In labor markets served by multiple providers that primarily confer the same type of credential, 53 percent of middle-skills credentials are expected to require redistribution to fully align with future occupational demand. In contrast, misalignment is expected to be 9 percentage points lower in a labor market where middle-skills credentials are conferred by the most diverse mix of institutions that primarily grant either certificates, associate's degrees, or bachelor's degrees (Figure 9).

Figure 9. Credentials-to-jobs misalignment tends to be lowest in labor markets where the production of certificates and associate's degrees is most evenly distributed across institutions that primarily confer either certificates, associate's degrees, or bachelor's degrees.



Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: The sample is restricted to labor markets served by two or more institutions. These results are predicted values from regressions of misalignment at the local labor-market level on the diversity of middle-skills credentials conferred by institutions that primarily grant certificates, associate's degrees, or bachelor's degrees, the proportion of credentials conferred by public community colleges, the proportion of credentials conferred by private nonprofit institutions, and the total number of providers. The regressions include first-order and second-order terms for the mix of credential levels represented, allowing for a nonlinear relationship between this compositional characteristic and the level of labor-market misalignment.

The mix of middle-skills credentials conferred by public, for-profit, and private nonprofit providers has a greater influence on credentials-to-jobs alignment than the mix conferred by institutions that primarily grant either certificates, associate's degrees, or bachelor's degrees.

Labor markets with more providers of middle-skills credentials achieve greater alignment, especially when a diverse mix of providers is represented. But what mix is most beneficial for aligning labor supply with future occupational demand? To answer this question, we consider how institutional representation varies across local labor markets.

The mix of middle-skills credentials granted by public, for-profit, and private nonprofit providers varies more across labor markets than the mix of credentials granted by institutions that primarily confer either certificates, associate's degrees, or bachelor's degrees. For instance, the proportion of credentials granted by public community colleges ranges from 27 percent at the 25th percentile to 94 percent at the 75th percentile across labor markets with multiple providers, whereas the proportion of credentials granted by institutions primarily conferring certificates ranges considerably less — between 0 and 12 percent — across the same percentile range.⁴⁷

As a result, the mix of credentials granted by public, for-profit, and private nonprofit providers accounts for more than twice the variation in misalignment that is accounted for across labor markets than the mix granted by institutions that primarily confer either certificates, associate's degrees, or bachelor's degrees. In other words, the mix of credentials granted by public, for-profit, and private nonprofit providers plays a larger role in determining the level of credentials-to-jobs alignment in most local labor markets served by multiple providers. As discussed above, this is not because competition between public, for-profit, and private nonprofit providers drives institutions to be more responsive to local employers' hiring needs. Instead, these types of institutions tend to produce certificates and associate's degrees that lead to different types of middle-skills work, and labor markets served by different types of providers benefit from the diversity of credentials conferred.

⁴⁷ Within these ranges, credentials-to-jobs alignment is also more sensitive to the mix of credentials conferred by public, for-profit, and private nonprofit institutions than to the mix conferred by institutions primarily granting either certificates, associate's degrees, or bachelor's degrees. Specifically, the level of misalignment between a labor market where public community colleges confer 27 percent of middle-skills credentials and one where such colleges confer 94 percent is expected to differ by 9 percentage points (44 percent versus 53 percent). In contrast, the level of misalignment between a labor market where no institutions primarily conferring certificates operate and one where such providers confer 12 percent of middle-skills credentials is expected to differ by 5 percentage points (53 percent versus 48 percent).

Part 3. Racial/Ethnic Gaps in Credentials-to-Jobs Alignment



Opportunity in the United States is largely determined by geography. Access to good schools, thriving communities, and well-paying jobs varies widely according to where a person lives.⁴⁸ At the same time, geographic segregation by race/ethnicity is prevalent, with different groups concentrated in different communities and often in different neighborhoods within a community.⁴⁹ The geography of opportunity and the overlapping geography of race thus contribute to large gaps in educational and economic outcomes by race/ethnicity. Just as geographic segregation by race/ethnicity affects overall access to opportunity, it also determines access to the middle-skills education and training providers that serve the local labor market.⁵⁰

Most working-age adults (ages 18–65) in the United States live within commuting distance by car of a local certificate-granting or associate’s degree-granting institution. However, American Indian/Alaska Native adults are 3 to 18 times more likely than adults in other racial/ethnic groups to live in communities that have no local provider of middle-skills credentials. Among working-

48 Chetty et al., “The Opportunity Atlas,” 2018.

49 Frey, *Mapping America’s Diversity with the 2020 Census*, 2021.

50 We also examined but found no evidence of gaps between low-income and high-income individuals within each racial/ethnic group.

age adults who do have access to a local institution, American Indian/Alaska Native and Black/African American adults tend to live in areas with better credentials-to-jobs alignment than people of other racial/ethnic backgrounds. In contrast, Hispanic/Latino adults are the most likely to live in communities with particularly high levels of credentials-to-jobs misalignment, with 42 percent residing in areas with above-median levels of misalignment compared with 31 percent of all other working-age adults.

It's important to acknowledge that reducing racial/ethnic gaps in credentials-to-jobs alignment will not, by itself, equalize economic opportunity by race/ethnicity. All things considered, a marketplace in which credential production aligns with labor-market demand should balance the needs of workers and those of employers, giving neither party the upper hand. But even in such a case, far too many middle-skills jobs would continue to offer poor pay and limited possibilities of advancement.⁵¹ In addition, credentials-to-jobs alignment should not come at the cost of transfer pathways to bachelor's degree programs. Livable wages in entry-level middle-skills jobs, better articulated work-based pathways to career advancement, higher certificate and associate's degree completion rates, and more reliable transfer pathways to bachelor's degree programs are all needed to raise the economic prospects for individuals in middle-skills programs. These changes would also address and improve racial/ethnic disparities in economic opportunity, given that Black/African American, Hispanic/Latino, and Indigenous individuals pursuing postsecondary education or training are more likely than white or Asian/Asian American adults to enroll in two-year rather than four-year institutions.⁵²

American Indian/Alaska Native adults are 3 to 18 times more likely than working-age adults in other racial/ethnic groups to live in places with no local middle-skills education or training providers.

Of the 709 local labor markets in the United States, 20 percent have no institutions granting certificates or associate's degrees.⁵³ These local labor markets consist primarily of sparsely populated rural areas, home to only 2 percent of working-age adults.⁵⁴ Yet even within this small segment of the population, disparities by race/ethnicity in access to middle-skills education persist. More than 5 percent of American Indian/Alaska Native adults lack access to a local provider of middle-skills education or training, which is more than triple the proportion of white adults without access and 18 times the proportion of Asian/Asian American adults without access. Less than 1 percent of Asian/Asian American, Black/African American, and Hispanic/Latino adults

51 Carnevale et al., *What Works*, 2023; Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022.

52 US Department of Education, Table 306.20 of the *Digest of Education Statistics*, 2022.

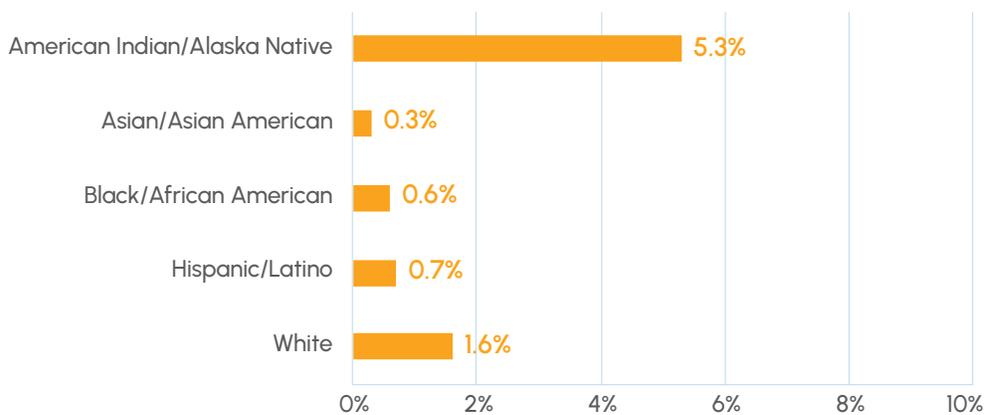
53 Specifically, 144 of the 709 US local labor markets lack any middle-skills provider. These places are commonly referred to as "education deserts." For further reading on how geography limits college access, see Hillman and Weichman, *Education Deserts*, 2016.

54 Access in this context is defined as living within commuting distance by car of an institution granting certificates or associate's degrees. In reality, however, many students pursuing middle-skills credentials rely on public transit to get to campus, and a much larger proportion of individuals lack access when it is defined according to access to public transit. According to the Civic Mapping Initiative, only 57 percent of public colleges that primarily grant certificates or associate's degrees are located within walking distance of a transit stop. Crespi et al., *Waiting for the Bus?*, 2021.

live in communities without a local middle-skills education or training provider (Figure 10).

The gap in access between American Indian/Alaska Native adults and other racial/ethnic groups is fully explained by differences in where they tend to live. American Indian/Alaska Native adults are more likely than other groups to live in very rural communities, and the likelihood that a labor market is served by a local institution is lower in those places. Living on tribal lands explains some, but not all, of these differences: only 13 percent of American Indian/Alaska Native individuals lived on tribal lands as of 2020,⁵⁵ most tribal lands are served by a tribal college or university,⁵⁶ and all of these institutions offer middle-skills credentials, including associate's degrees.⁵⁷ After accounting for who lives on tribal lands,⁵⁸ we find that American Indian/Alaska Native adults remain 2.4 times more likely than white adults and 10 times more likely than Asian/Asian American adults to lack access to a middle-skills provider.⁵⁹ In contrast, after accounting for the proportion of each labor market's population living in urban versus rural areas, we find that the likelihood of living in a community served by at least one local institution granting certificates or associate's degrees is equalized across racial/ethnic groups. Thus, living in a rural area plays a bigger role than living specifically on tribal lands in whether American Indian/Alaska Native adults have access to a middle-skills education or training provider.

Figure 10. The proportion of American Indian/Alaska Native adults without access to a local middle-skills education or training provider ranges from 3 to 18 times greater than that of all other racial/ethnic groups.



Proportion of adults ages 18–65 who lack access to a middle-skills education provider

Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

55 US Census Bureau, *American Indians and Alaska Natives in the United States*, 2020.

56 American Indian Higher Education Consortium, “Tribal Colleges and Universities,” 2022.

57 American Indian Higher Education Consortium, “TCU Locations,” 2022.

58 For this analysis, we define tribal lands using the US Census Bureau’s designation for American Indian, Alaska Native, or Native Hawaiian homeland areas.

59 Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

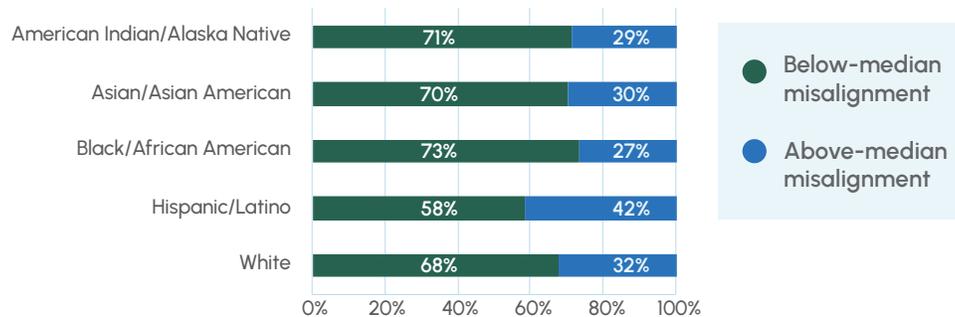
Hispanic/Latino adults are more likely than working-age adults in all other racial/ethnic groups to live in places with poor credentials-to-jobs alignment.

Additional racial/ethnic disparities in credentials-to-jobs alignment surface when we consider areas served by at least one middle-skills education or training provider. Although American Indian/Alaska Native adults have less access to local institutions than all other racial/ethnic groups, when they do live in communities that are served by local providers, those communities are more likely to have relatively strong credentials-to-jobs alignment. Seventy-one percent of American Indian/Alaska Native adults with local access reside in communities with relatively strong alignment.⁶⁰ Almost three-quarters of Black/African American adults live in communities with relatively strong credentials-to-jobs alignment, the highest proportion of any racial/ethnic group.

In contrast, Hispanic/Latino adults are the most likely to live in places where the mix of credentials that institutions offer is particularly misaligned with the labor market. Forty-two percent of Hispanic/Latino adults live in communities with misalignment levels above the median for local labor markets. This proportion is significantly higher than that of all other racial/ethnic groups. For example, the proportion of white and Asian/Asian American adults living in communities with above-median levels of misalignment is 10 percentage points and 12 percentage points lower, respectively, than that of Hispanic/Latino adults (Figure 11).

Figure 11. Among working-age adults with local access to middle-skills providers, Hispanic/Latino adults are 1.3 to 1.6 times more likely than adults of other racial/ethnic backgrounds to live in communities with above-median misalignment between credentials and jobs.

Percentage of working-age adults living in a labor market, by level of misalignment



Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

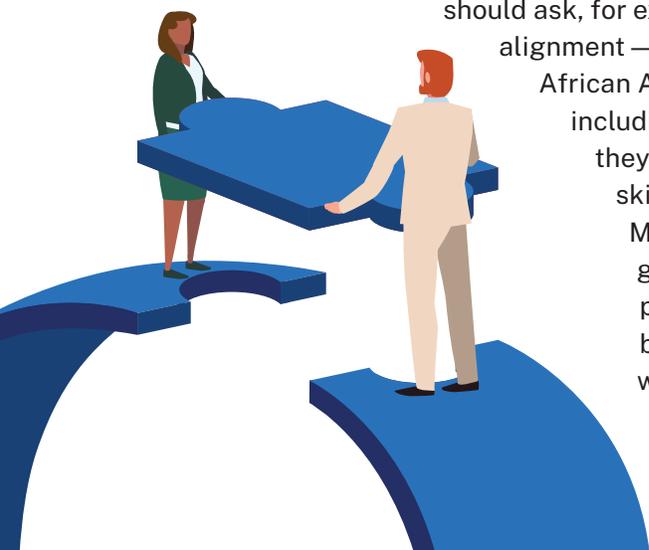
Note: The sample is restricted to adults ages 18–65 living in labor markets served by at least one middle-skills education or training provider.

⁶⁰ Communities with relatively strong alignment have misalignment levels that are below the median across all local labor markets.

Disparities in credentials-to-jobs alignment by race/ethnicity are only partially explained by observable differences between local labor markets, such as whether they are relatively urban or rural and the number of providers they have. For example, white adults have a 9-percentage-point advantage over Hispanic/Latino adults in the likelihood of living in a relatively well-aligned labor market, even after accounting for observable differences between the communities in which Hispanic/Latino and white adults live.

While some portion of the racial/ethnic gaps in credentials-to-jobs alignment originates in the fact that people of different backgrounds live in communities with very different characteristics,⁶¹ sizable racial/ethnic gaps in credentials-to-jobs alignment remain after accounting for some of these differences. This is because most of the variation in alignment levels stems from factors we cannot observe in our data. Evidence suggests these factors likely include the levels of investment in labor-market information tools,⁶² career pathway programs,⁶³ work-based learning opportunities — including paid internships and apprenticeships⁶⁴ — and trust and collaboration among various local stakeholders.⁶⁵ Indeed, the characteristics we can account for explain less than half of the variation in alignment levels across local labor markets.

We have only begun to scratch the surface on the conditions that can improve credentials-to-jobs alignment in local labor markets and reduce alignment gaps between different racial/ethnic groups. In addition to identifying more of the factors that contribute to variation in alignment levels across local labor markets and racial/ethnic gaps in alignment, future research should assess the relationship between credentials-to-jobs alignment and transfer rates. This research should ask, for example, whether groups that tend to live in areas with better alignment — specifically, American Indian/Alaska Native and Black/African American adults — have better access to economic opportunity, including through transferring to four-year programs, or whether they instead experience tracking toward lower-paying middle-skills work over potentially better-paying four-year credentials. Much remains to be learned, but one thing is certain: the geography of race and the geography of opportunity do not provide middle-skills graduates of different racial/ethnic backgrounds with equal chances of working in jobs that align with their knowledge, training, and skills.



61 For example, the average number of middle-skills education or training providers in the labor markets where Black/African American, Hispanic/Latino, and white adults live is 45, 73, and 35, respectively.

62 Van Noy et al., *How Colleges and Universities Are Using Labor Market Information (LMI)*, 2023.

63 Cotner et al., *Designing and Delivering Career Pathways at Community Colleges*, 2021; Strawn et al., *New Insights on Career Pathways*, 2021.

64 Reed et al., *An Effectiveness Assessment and Cost-Benefit Analysis of Registered Apprenticeship in 10 States*, 2012; Tu, "What Can We Learn from Longitudinal Studies on the Impacts of College Internships?," 2022.

65 Cleary et al., "Towards a New Understanding of Labor Market Alignment," 2017.

Conclusions and Policy Recommendations

We believe there are several steps that stakeholders and policymakers can take to help middle-skills providers be collectively more responsive to the needs of students and their local economies. These steps fall into four areas:

- Focus on **alignment across institutions** so investments are amplified and are not at odds or redundant.
- Improve **data practices** so efforts to align credential production with labor-market needs are well-informed and grounded in reality.
- Invest in **counseling and programmatic efforts** that maximize students' use of data and improve pathways to careers.
- Improve **career preparation and transfer pathways to bachelor's degree programs in fields with no direct occupational match**, such as those in liberal arts, general studies, and humanities.

With coordinated efforts across these areas, middle-skills education can become a more reliable way for workers to access good jobs and for employers to staff their businesses.

Focus on alignment across institutions so investments are amplified and are not at odds or redundant.

As this report illustrates, credentials-to-jobs alignment occurs at the systems level. In local labor markets served by multiple institutions that offer middle-skills credentials, these middle-skills providers almost always achieve better alignment as a group than any single provider does on its own. No single provider can serve every need of the local workforce, and efforts to do so would be unrealistic and inefficient. If individual providers instead specialize in what they each do best while coordinating their offerings with others, the system as a whole will be better able to deliver the middle-skills credentials that local employers need.

In order for this kind of system-wide coordination to happen, we need a regulatory framework that makes cross-institutional planning compulsory, along with an entity responsible for overseeing such planning. Government oversight is more important than ever to ensure the delivery of high-quality, in-demand programs in the face of our changing regulatory, economic, and educational landscape.

The following strategies would help improve complementarity among institutions and raise the overall level of alignment between provider offerings and labor-market needs within local areas.

- 1. The federal government, state governments, and the private sector all must invest more long-term funding to secure the future economic health of local labor markets.** Federal funding for workforce education and training is extremely low and has been declining for decades. According to the Government Accountability Office, total funding for active labor-market policies stands at less than 0.1 percent of US gross domestic product (GDP), compared with 0.5 percent of GDP in most other wealthy countries.⁶⁶ Meanwhile, public community colleges, which constitute the largest group of middle-skills providers and typically serve students with the greatest needs, are severely underfunded. On average, these colleges receive almost \$9,000 less per student in education revenue than four-year institutions receive, which translates into less money to spend on education and services.⁶⁷ Finally, expanding high-quality work-based learning that prepares students for middle-skills jobs will require more involvement from employers, including greater investments to expand paid internship and apprenticeship opportunities.⁶⁸ Increased investment from all of these sectors will be crucial to launching and sustaining the large-scale efforts necessary to improve credentials-to-jobs alignment.
- 2. A coordinating entity should evaluate the anticipated impact on system-wide labor-market alignment when new programs are proposed, old programs close, and existing institutions or programs initiate the reaccreditation process.** In some states, program delivery is already subject to system-wide coordination or legislative oversight.⁶⁹ But in many states it is not. This practice should be standard across the country, with each state designating an oversight body that pays close attention to how the range of middle-skills providers (including public, for-profit, and private institutions) is filling projected labor-market needs. In Florida, for example, the state's Bureau of Workforce Statistics and Economic Research

66 Holzer, "Should the Federal Government Spend More on Workforce Development?," 2023.

67 Yuen, *The \$78 Billion Community College Funding Shortfall*, 2020; Levin et al., *An Examination of the Costs of Texas Community Colleges*, 2022.

68 Spiker, *Partnering Up*, 2019.

69 For example, the Maryland Higher Education Commission has statutory authority over academic program review, approval, and recommendation. Maryland Higher Education Commission, "Academic Programs and Institutional Approvals," n.d.

projects occupational demand in the areas served by state colleges, and decision-makers use the data when determining approval for proposed bachelor's degrees.⁷⁰ Oversight by public coordinating agencies should help ensure that misalignment is not exacerbated when low-quality programs shutter, new programs are created, or existing programs are out-of-step with local workforce needs. These agencies will have an important role to play as the US Department of Education's new Financial Value Transparency and Gainful Employment regulations go into effect. The new rules may prompt closures among programs that lead to jobs that are in demand but produce low wages. In these cases, overseeing entities could work with employers to establish prevailing wages that will ensure the programs continue to exist.

- 3. The coordinating body should also be responsible for convening all local middle-skills providers, along with employers, workforce development boards, and economic development agencies.** A third party with the focus and means to support alignment efforts should hold stakeholders accountable for developing and sustaining these efforts, while also playing an important facilitator role when the interests of employers, postsecondary institutions, and community members don't match. (For instance, employers may benefit from an oversupply of local workers because it gives them more applicants and keeps wages low – but this situation isn't good for workers or for postsecondary institutions facing accountability pressure.) Colleges in some areas have recognized the value of cross-institutional coordination and adopted a consortium approach on their own, but they would benefit from support to connect their efforts with those of local employers and public agencies. For example, the Bay Area Community College Consortium consists of 28 colleges surrounding San Francisco and Monterey Bay, California, which are collectively “working to ensure the right number of programs, in the right places, teaching the right skills to meet industry's workforce development needs and students' needs for meaningful, livable-wage work.”⁷¹ Local labor markets will need oversight, coordination, and support to launch and sustain these types of efforts at scale throughout the country.
- 4. Employers and middle-skills providers should work together to expand strategic partnerships in addition to meeting on a regular basis.** Employer involvement is essential to ensuring alignment: employers can identify emergent hiring needs in the local economy and develop work-based learning opportunities that lead to middle-skills jobs in high-demand fields. But employers are often not involved enough in local educational partnerships, which may result in competition among providers for the ability to offer work-based learning

70 FloridaCommerce, “State Colleges Projections Portal,” 2023.

71 Bay Area Community College Consortium (website), n.d.

experiences.⁷² Even the most successful employer partnerships are often too limited in scope, connecting a single institution with a single large employer (for example, Walmart and Southern New Hampshire University or Starbucks and Arizona State University).⁷³ We need to move from one-off partnerships to sector-wide collaborations between multiple institutions and multiple employers. Industry leaders, institutional leaders, and an appointed coordinating entity would all play critical roles in developing public-private partnerships to support such efforts at larger scale, drawing in small and midsize employers along with large corporations to serve critical needs. These partnerships should involve other local institutions as well — not only education and training providers, but also local community organizations.⁷⁴

Improve data practices so efforts to align credential production with labor-market needs are well-informed and grounded in reality.

The collection and availability of data on institution-to-workforce alignment is improving all the time, with the US Department of Education adding new information to the College Scorecard and states investing in the development of robust Statewide Longitudinal Data Systems that track the relationships between credentials and careers. Nonetheless, more work is needed to ensure that all local labor markets have clear and complete information about how well their middle-skills providers are serving local labor-market needs.

Continuing from the list above, the following data strategies would support alignment efforts.

- 5. All states should improve their production of local and regional job opening estimates by occupation over near-term and longer time horizons** (for example, by creating 5- and 10-year estimates at the local and regional levels). Each state's labor department or workforce agency is currently responsible for creating short- and long-term employment projections at the state level,⁷⁵ and companies like Lightcast and Chmura can provide an abundance of supplementary real-time jobs information when resources are committed to purchase those proprietary data sources. But more can be done: not all states have data systems that are

72 The limited availability of work-based learning opportunities has inspired policymakers to hold institutions accountable for providing these opportunities when they are required by degree programs. New rules recently released by the Department of Education aim to ensure that students enrolled in programs with clinical and/or externship requirements for graduation or licensure have access to those experiences, but the rules provide no assurances for students enrolled in programs without those requirements, in part because employer-provided training opportunities are so limited. US Department of Education, "Fact Sheet: Protecting Students through Final Regulations That Strengthen Department of Education Oversight and Monitoring of Colleges and Universities," 2023.

73 Radford et al., *Mapping the Opportunities*, 2023.

74 Radford et al., *Mapping the Opportunities*, 2023.

75 Projections Managing Partnership, "Labor Market Projections," n.d.

equally wide-ranging and comprehensive, especially at the regional and local levels.⁷⁶ That needs to change, and ensuring adequate federal and state funding to improve data access and utility is a first step. States like North Carolina, with its myFutureNC dashboard, set a strong example of what other states can do to build robust data infrastructures connecting education programs and jobs.⁷⁷

6. State governments must give more support to postsecondary providers as they process, interpret, and apply the data. Even when good local data are in plentiful supply, many postsecondary education and training providers do not receive external support to help them access and use the data effectively, and they shouldn't have to bear this burden alone. Only about 20 percent of colleges in a recent survey indicated they have the capacity for intensive collection, analysis, and reporting of labor-market information, and few colleges provide structured institutional support, such as professional development and data literacy training, for its use.⁷⁸ Staff capacity and the cost and accessibility of labor-market data remain the biggest barriers to expanding colleges' use of labor-market information.⁷⁹ State governments can help by requiring that labor-market data be used to inform decisions about program approval and maintenance, but they also need to provide more funding and support to ensure that the information is used well.

7. The US Department of Education should require institutions to report additional data on certificate and degree completers disaggregated by program of study. This should include reporting the number of credentials granted by program to first-time certificate and degree completers, as many middle-skills credentials are earned by workers who already have postsecondary degrees.⁸⁰ The US Department of Education's Integrated Postsecondary Education Data System (IPEDS) already reports data on postsecondary credentials earned by first-time students; disaggregating those counts by program type would greatly enhance the usefulness of the data. Without knowing whether new credentials are opening doors to new careers or supplementing existing ones, it is difficult to know if providers are graduating too few or too many students in each field.

76 Van Noy et al., *How Colleges and Universities Are Using Labor Market Information (LMI)*, 2023.

77 myFutureNC, "College and Career Access," n.d.

78 Van Noy et al., *How Colleges and Universities Are Using Labor Market Information (LMI)*, 2023.

79 Van Noy et al., *How Colleges and Universities Are Using Labor Market Information (LMI)*, 2023.

80 Among all certificates conferred within six years to students who first entered a middle-skills education or training program in 2012, 78 percent were granted to individuals who had not previously received a certificate, but who may have earned a degree prior to certificate completion. Likewise, 87 percent of associate's degrees were granted to individuals who had not previously earned an associate's degree, but who may have earned a certificate or bachelor's degree prior to degree completion. It is important to note that these estimates exclude individuals who obtain middle-skills credentials more than six years after entering a postsecondary program, resulting in an underestimation of the proportion of certificates and associate's degrees conferred to individuals who already possess a college credential. Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Beginning Postsecondary Students Longitudinal Study (BPS), 2012, 2014, and 2017.

Invest in counseling and programmatic efforts that maximize students' use of data and improve their pathways to careers.

In the end, achieving strong credentials-to-jobs alignment is about facilitating student success. Students need to make use of available data to pursue credentials and careers that matter to them and that set them up for economically secure lives. If students aren't developing and achieving educational and career goals that make sense within the context of the broader economy, then institutions, employers, and the community at large will all fall short of meeting their goals as well. When it comes to successful education and training experiences, alignment goes beyond matching programs of study to occupations. It involves careful planning and execution to ensure that students leave their postsecondary programs with a transferable set of both general and specific in-demand skills.

The following measures can help ensure that students have the preparation to succeed in a dynamic, rapidly changing economy.

- 8. Students need a better career counseling system to guide them in their educational and career decisions.** The sheer quantity of available data can be overwhelming, and many students need help sifting and interpreting information as they seek fields in which their postsecondary investment will pay off. But many students aren't receiving good information from their providers, much less any help interpreting it: a recent survey shows that only about half of colleges that use labor-market information to guide program development also share this information with prospective students.⁸¹ This situation leaves too many students in the dark about how their programs map to the availability of local jobs. Students who want to major in low-paying or low-demand fields should have the right and the access to do so — but they should be fully informed about the likely outcomes. A more robust and comprehensive career counseling system would help to deliver the message. Misalignment will remain widespread as long as students continue to make uninformed choices about what to study.

Fortunately, the federal government is stepping up its efforts to generate data that can be used to address information deficits — and to give teeth to the use of those data. When the new rules issued by the Department of Education take effect, the Gainful Employment regulations will hold institutions accountable for ensuring that all programs at for-profit institutions and all certificate programs meet maximum debt-to-earnings and minimum earnings premium standards (relative to high school graduates), and the Financial Value Transparency regulations will require that these same metrics be communicated to students at nonprofit and public institutions. Both sets of regulations will require students

81 Van Noy et al., *How Colleges and Universities Are Using Labor Market Information (LMI)*, 2023.

to acknowledge that they were informed of the financial risk before enrolling in certificate programs that generate high debt burdens among graduates. Another set of regulations recently released by the Department of Education requires that institutions maintain adequate career services that assist students with finding post-graduation employment.⁸²

We believe that the acknowledgment requirements should be extended to apply to all degree and certificate programs, not just those with high debt. The Department of Education plans to publish the data collected in support of these efforts on a new website; we recommend that this website also include information about transfer rates and whether graduates work in field.

9. Career counseling systems and academic programs need to better connect students with work-based learning opportunities that support their career interests. Work-based learning opportunities can take many forms, including internships, apprenticeships, co-ops, mentorships, and on-the-job training.⁸³ Work-based learning is valuable not only because it helps students build skills and professional connections, but also because it can lead directly to employment and increases the likelihood of employment in a good job.⁸⁴ And yet, very few students pursuing middle-skills credentials currently participate in work-based learning. Only 15 percent of young workers in the United States with some college but no degree have completed a work-based learning program, and just 34 percent of young adults with an associate's degree have completed such a program.⁸⁵ Work-based learning should be widely used by all students, regardless of their major or background, rather than only reaching those who stumble into it. And the quality of work-based learning matters too. More programs must include elements associated with high-quality experiences — namely, opportunities to build positive relationships and social capital while doing hands-on work in new environments.⁸⁶

New rules for postsecondary institutions recently released by the Department of Education will ensure that students have access to clinical and externship experiences that are required for graduation or licensure in geographically accessible locations.⁸⁷ We believe these rules should be extended to all work-based learning opportunities — including internships,

82 US Department of Education, “Fact Sheet: Protecting Students through Final Regulations That Strengthen Department of Education Oversight and Monitoring of Colleges and Universities,” 2023.

83 Cahill, *Making Work-Based Learning Work*, 2016; Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022.

84 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022.

85 Carnevale et al., *How Limits to Educational Affordability, Work-Based Learning, and Career Counseling Impede Progress toward Good Jobs*, 2022.

86 Ross et al., *Work-Based Learning Can Advance Equity and Opportunity for America's Young People*, 2020.

87 US Department of Education, “Fact Sheet: Protecting Students through Final Regulations That Strengthen Department of Education Oversight and Monitoring of Colleges and Universities,” 2023.

apprenticeships, and co-ops — to expand opportunities for students to build skills and social capital in professional settings that align with their studies. Moreover, to make work-based learning accessible to students who need to earn income while in school, employers should be required to pay students for their time and labor.

10. Students need to develop personalized skills portfolios that they can show to prospective employers to demonstrate the competencies they have acquired through education and training. The widespread use of such portfolios is also critical to facilitating skills-based hiring, a practice that is increasingly common in middle-skills jobs but hindered by challenges in validating job applicants' skills.⁸⁸ For individual workers, improving skills-to-jobs alignment can help reduce the wage penalty associated with working in a job that doesn't directly match their field of study⁸⁹ — a circumstance that is arguably the norm for graduates of programs that have no direct match to occupations. By helping students chronicle and articulate the skills they are developing in their programs, providers can strengthen skills-to-jobs alignment.

Improve career preparation and transfer pathways to bachelor's degree programs in fields with no direct occupational match, such as those in liberal arts, general studies, and humanities.

As our analysis shows, programs in liberal arts, general studies, and humanities contribute significantly to overall misalignment between middle-skills credentials and projected labor-market demand. While these credentials are more likely to lead to successful transfer to a bachelor's degree program than middle-skills credentials overall,⁹⁰ they do not align directly with any occupation.⁹¹

88 Fuller et al., *The Emerging Degree Reset*, 2022; Hancock et al., "Taking a Skills-Based Approach to Building the Future Workforce," 2022.

89 For a discussion of how a mismatch between degree fields and occupations may affect the college earnings premium, see Yakusheva, "Return to College Education Revisited," 2010.

90 Approximately 42 percent of certificate and associate's degree completers in liberal arts, general studies, and humanities eventually transfer to four-year institutions, compared with 21 percent of middle-skills graduates overall. Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Beginning Postsecondary Students Longitudinal Study (BPS), 2012, 2014, and 2017.

91 As noted above, according to the CIP-SOC crosswalk, programs in liberal arts, general studies, and humanities technically align to jobs as postsecondary educators. However, fewer than 5 percent of graduates in these programs actually work in education after completing a middle-skills credential.

The contribution of these programs to middle-skills alignment and to individuals' economic payoff could be improved in several ways, including the following.

11. Employers and educators need to work together to strengthen pathways to occupations in programs that have no direct occupational match at present. For example, middle-skills providers could embed work-based learning in liberal arts, general studies, and humanities curricula so that students' educational experience includes exposure to different careers and application of their classroom-based learning to real-world work. These work-based learning opportunities should be designed to prepare students for direct employment after graduation while also exposing them to career pathways that may require additional education. As noted earlier in this report, we believe that new rules requiring geographic accessibility for clinical and externship experiences should be expanded to require access to work-based learning in all middle-skills programs. This promises to create more clearly articulated pathways into the labor market for all programs, including those that lack a strong occupational link today.

12. Education and training providers need to create smoother transfer pathways to bachelor's degree programs so more students earn four-year degrees, which are associated with higher earnings on average.⁹² Only one-third of students enrolled in associate's degree programs transfer to four-year institutions, even though most degree-seeking students at community colleges intend to earn a bachelor's degree.⁹³ Meanwhile, academic performance in humanities and liberal arts courses is a strong predictor of successful transfer to a four-year institution and subsequent completion of a bachelor's degree.⁹⁴ Thus, students with strengths in these programs may be well suited to pursue a four-year degree, yet fewer than half of graduates in these programs do so.

With a combination of the changes suggested above, we can make concrete advancements toward improving credentials-to-jobs alignment and strengthening the ties between local education and workforce systems, thus benefiting individuals, institutions, employers, and local communities.

92 Carnevale et al., *The College Payoff*, 2021.

93 Jenkins and Fink, *Tracking Transfer*, 2016.

94 Pippins and Belfield, "Humanities and Liberal Arts Education at Community College," 2019.

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Appendix A.

Data Sources and Methodology

This appendix describes the data and analytical approach used to estimate misalignment between the current supply of middle-skills workers and projected demand for those workers in local labor markets across the United States.

1. Data

We used five data sources in this study. To determine the current supply of certificates and associate's degrees conferred in each local labor market (which we define by commuting zone), we relied on administrative data from the US Department of Education, National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS). Specifically, we used IPEDS credentials data from 2019 to 2021 at the institution-by-field-of-study level.¹ We included in the study sample all institutions that conferred at least one certificate (from a program lasting two years or less) or one associate's degree over this three-year period.

To estimate the projected demand for job openings available to middle-skills workers, we relied on our own State Job Projections data set, constructed in support of our report *After Everything: Projections of Jobs, Education, and Training Requirements through 2031* and related state analysis.² This data set forecasts the number of job openings by state, occupational cluster, and education level from 2021 to 2031. We constructed these projections using data from the US Census Bureau and US Bureau of Labor Statistics (BLS), March Current Population Survey (CPS), and the American Community Survey (ACS). We started with the BLS's national projections of average annual occupational openings from 2021 to 2031. We then allocated the BLS projections across states and education levels in a four-step process. In step one, we defined the educational distribution within

1 Despite the COVID-19 pandemic's negative impact on college enrollments during this period, the annual number of certificates and associate's degrees conferred remained nearly unchanged between the pre-pandemic year of 2019 and the pandemic years of 2020 and 2021. Therefore, our use of IPEDS data covering middle-skills credentials conferred during the pandemic is unlikely to impact the findings in this report.

2 Carnevale et al., *After Everything*, 2023.

each occupation for the nation using the CPS data and separately for each state in 2021 using the ACS data. In step two, we applied an exponential smoothing technique to the CPS data to forecast the change in the educational distribution within each occupation for the nation between 2021 and 2031. In step three, we forecast the educational distribution within each occupation for each state in 2031 by multiplying the base-level distribution for each state in 2021 by the expected change for the nation between 2021 and 2031. In step four, we allocated the BLS job opening projections according to the projected educational distribution within each occupation for each state in 2031.³

To allocate the number of projected job openings for middle-skills workers across local labor markets within each state, we used data from the ACS spanning the 10-year period from 2012 to 2021.⁴

We assigned each county in the United States to a local labor market by commuting zone, using a crosswalk developed by the Economic Research Service (ERS) of the US Department of Agriculture in 2000. The commuting zones were developed by grouping counties into larger areas based on common commuting patterns identified from US Census Bureau commuting data. According to this process, ERS identified 709 commuting zones across the United States. Among these zones, 565 (80 percent) included at least one postsecondary institution that granted certificates or associate's degrees in 2019, 2020, or 2021.

Finally, to determine the proportion of the population residing in urban versus rural areas within each local labor market, we relied on 2020 Census population counts by county and urbanicity from the US Census Bureau.

2. Current Supply of Middle-Skills Credentials

The credentials data in IPEDS are reported at the institution-by-field-of-study level using a 6-digit Classification of Instructional Programs (CIP) code. To match the CIP codes from IPEDS with Standard Occupational Classification (SOC) codes, we utilized the 2020 CIP-SOC crosswalk developed by the BLS and the US Department of Education's National Center for Education Statistics. Ninety-eight percent of all certificates and associate's degrees conferred between 2019 and 2021 were successfully matched to a SOC code.

Next, we aggregated the number of credentials conferred by occupational cluster across all institutions operating within each local labor market over the three-year period from 2019 to 2021. By using three years of pooled credentials data, we mitigated the potential for spurious supply-demand misalignment caused by year-to-year fluctuations in the distribution of certificates and associate's degrees granted in each local labor market. Furthermore, we grouped SOC codes into

3 For additional details on how we constructed the State Job Projections data set, see the technical appendix to Carnevale et al., *After Everything*, 2023.

4 We excluded the 2020 ACS sample due to the COVID-19 pandemic, which disrupted data collection and yielded a survey that is not appropriate for including in trend analyses. For additional details, see <https://www.census.gov/programs-surveys/acs/guidance/comparing-acs-data/2020.html>.

broad occupational clusters to minimize measurement error when determining the distribution of middle-skills credentials across occupations. Specifically, we defined nine program categories that mapped to the following occupational clusters: blue-collar; community services and arts; education; food and personal services; healthcare; managerial and professional office; sales and office support; science, technology, engineering, and mathematics (STEM); and programs with no direct occupational match.⁵

Since many CIP codes correspond to multiple SOC codes, we allocated the number of credentials conferred in each program of study across all CIP-SOC combinations based on the projected share of middle-skills job openings in each occupational cluster within the local labor market where each college is located. This approach ensured that we did not duplicate the count of credentials when linking programs of study to occupational clusters.

After aggregating the number of credentials conferred by occupational cluster in each local labor market, we divided those counts by the overall number of credentials conferred in that market. This calculation generated our supply metrics: the proportion of credentials conferred in each occupational cluster for each local labor market where a certificate-granting or associate's degree-granting institution operates.

3. Projected Demand for Middle-Skills Workers

To estimate the proportion of middle-skills job openings in each occupational cluster for each local labor market, we followed a five-step process.

In step one, we linked respondents' place of residence in the annual ACS data to commuting zones. We accomplished this by crosswalking the Public Use Microdata Areas (PUMAs) reported in the ACS to US counties and then crosswalking US counties to local labor markets.⁶

In step two, we constructed three-year pooled ACS samples (e.g., 2012–14, 2013–15) and calculated the proportion of individuals ages 18–65 working in each labor-market-by-occupational-

5 Programs with no direct occupational match include the 2 percent of middle-skills credentials that did not match to a SOC code and the 26 percent of middle-skills credentials conferred in liberal arts, general studies, and humanities programs. While these programs technically align to jobs as postsecondary educators according to the CIP-SOC crosswalk, fewer than 5 percent of graduates in these programs actually work in education after completing a middle-skills credential. We therefore grouped programs in liberal arts, general studies, and humanities in the “no direct occupational match” category.

6 Because some PUMAs consist of multiple counties, we needed to create duplicate observations in the ACS samples and then adjust the individual respondent weights to restore the original population count. To achieve this, we used the proportion of the total PUMA population in each county as the allocation factor for determining the new respondent weights.

cluster grouping within each state.⁷ By using pooled ACS samples, we improved the coverage of occupations in each local labor market and reduced estimation noise caused by year-to-year sampling error.

In step three, we combined the pooled ACS samples and estimated the trend in the proportion of individuals working in each local labor market and occupational cluster from 2012 to 2021. We employed a fractional logit regression with a first-order time component to estimate the three-year running average employment share changes in each local labor market over the 10-year period. After estimating models for each labor-market-by-occupational-cluster grouping, we predicted the proportion of individuals working in each local labor market and occupational cluster in 2031.⁸

In step four, we allocated the total number of projected job openings from 2021 to 2031 in each state and occupational cluster held by workers with middle-skills credentials across the local labor markets within each state. We used the predicted proportions derived in the previous step as the allocation factor.

Lastly, in step five, we calculated our demand metrics of interest: the proportion of middle-skills job openings in each occupational cluster for each local labor market. We generated these measures by dividing the number of projected job openings in each local labor market and occupational cluster by the overall number of projected job openings within that local labor market.

4. Measuring Misalignment

Our analysis of labor-market alignment compares the distributions of supply and demand for middle-skills workers across occupational clusters, rather than absolute credential counts to projected job openings. We took this approach for several reasons. First, not all projected job openings require further education and training, and we were unable to distinguish between those that do and those that do not. Second, many individuals who earn certificates and associate's

7 We did not restrict the samples to individuals with only certificates or associate's degrees due to significant missing data in the calculated proportions. However, the proportions derived from the full sample closely align with those constructed from a sample restricted to middle-skills workers. The correlations between the proportions calculated from the full and restricted samples exceed 0.995 across all three-year pooled samples. Moreover, in over 90 percent of labor-market-by-occupational-cluster groupings, the values are within +/-1.9 percentage points of each other.

8 To assess the predictive accuracy of the models, we compared the predicted proportions from 2009 to 2011 to the observed proportions during those years. The results reveal strong model performance, with an average difference of 0.001 percentage points between the predicted and observed values. Furthermore, the difference falls within +/-1 percentage point across 75 percent of labor-market-by-occupational-cluster groupings, and within +/-2 percentage points across 90 percent of all groupings.

degrees are not first-time credential recipients.⁹ Furthermore, IPEDS does not report credential counts exclusively for first-time completers, and reliable estimates at the local labor-market level are not available. Thus, directly comparing credential counts to projected new job openings would overestimate the extent of misalignment between the supply and demand for middle-skills workers. Instead, we measured misalignment in each local labor market by comparing the proportion of certificates and associate's degrees conferred in each occupational cluster to the proportion of projected job openings in the same occupational cluster available to individuals whose highest level of educational attainment is a certificate or associate's degree.

We used the dissimilarity index to measure labor-market misalignment. For a given local labor market i , the dissimilarity index (DI) is calculated as follows:

$$DI_i = \frac{1}{2} \sum_{c=1}^9 |S_{ic} - D_{ic}|,$$

where S represents the proportion of certificates and associate's degrees conferred in occupational cluster c across all institutions in the local labor market from 2019 to 2021, and D denotes the proportion of projected middle-skills job openings from 2021 to 2031 in the same occupational cluster.

Various measures of alignment exist, but unlike the alternatives, the dissimilarity index offers an intuitive interpretation.¹⁰ In this report, it indicates the proportion of all middle-skills credentials conferred in each local labor market that would need to be redistributed from overrepresented programs of study to underrepresented ones to perfectly align the proportion of credentials conferred in each occupational cluster with the proportion of projected middle-skills job openings in each cluster.

9 Among all certificates conferred within six years to students who first entered a postsecondary institution in 2012, 78 percent were granted to individuals who had not previously received a certificate (but who may have earned a degree prior to certificate completion). Likewise, 87 percent of associate's degrees were granted to individuals who had not previously earned an associate's degree (but who may have earned a certificate or bachelor's degree prior to degree completion). Georgetown University Center on Education and the Workforce analysis of data from the US Department of Education, Beginning Postsecondary Students Longitudinal Study (BPS), 2012, 2014, and 2017. It is important to note that these estimates exclude individuals who obtain middle-skills credentials more than six years after entering a postsecondary institution, resulting in an underestimation of the proportion of certificates and associate's degrees earned by individuals who already possess a postsecondary credential.

10 While each has its strengths and limitations, different measures of alignment often produce highly correlated results. In our data, the correlation between labor-market misalignment using the dissimilarity index and the divergence index is 0.905.

Appendix B. Additional Details on Occupational Clusters and Credential Production

Table B1. Top five occupations available to workers with middle-skills credentials in each occupational cluster by number of projected annual openings

Occupational cluster	Occupation	Occupational cluster	Occupation
Blue-collar	<ul style="list-style-type: none"> Stocker/order filler Laborer/freight, stock, and material mover Heavy/tractor-trailer driver Maintenance/repair worker Assembler/fabricator 	Healthcare	<ul style="list-style-type: none"> Home health/personal care aide Nursing assistant Registered nurse Medical assistant Dental assistant
Community services and arts	<ul style="list-style-type: none"> Social/human services assistant Coach/scout Graphic designer Musician/singer Merchandise displayer/window trimmer 	Managerial and professional office	<ul style="list-style-type: none"> General/operation manager Farmer/rancher/agricultural manager Human resource specialist Financial manager Project management specialist
Education	<ul style="list-style-type: none"> Teaching assistant Preschool teacher Substitute teacher Library technician Adult education/ELL instructor 	Sales and office support	<ul style="list-style-type: none"> Cashier Retail salesperson Customer service representative Office clerk Secretary/administrative assistant
Food and personal services	<ul style="list-style-type: none"> Fast food/counter worker Waiter/waitress Janitor/cleaner Cook Supervisor of food preparation and serving staff 	STEM	<ul style="list-style-type: none"> Computer user support specialist Computer systems analyst Industrial engineer Network/computer systems administrator Software quality assurance analyst/tester

Source: Georgetown University Center on Education and the Workforce analysis of data from the US Department of Labor, Employment Projections, 2022.

Table B2. Distribution of middle-skills credentials conferred across occupational clusters by institutional control and primary level of credential conferred

Occupational cluster	All middle-skills providers	Institutional control			Primary level of credential conferred		
		Public	For-profit	Private nonprofit	Certificate	Associate's degree	Bachelor's degree
Blue-collar	12%	11%	16%	10%	19%	13%	5%
Community services and arts	2%	2%	2%	3%	1%	2%	2%
Education	10%	10%	8%	12%	5%	10%	11%
Food and personal services	10%	7%	27%	5%	42%	7%	5%
Healthcare	17%	14%	33%	26%	27%	17%	16%
Managerial and professional office	13%	14%	7%	15%	2%	13%	17%
Sales and office support	4%	3%	4%	9%	2%	4%	4%
STEM	5%	6%	2%	4%	2%	5%	5%
No match	28%	33%	2%	16%	1%	29%	34%
Total	100%	100%	100%	100%	100%	100%	100%
Proportion of middle-skills credentials	100%	80%	16%	4%	9%	70%	22%

Source: Georgetown University Center on Education and the Workforce (GUCEW) analysis of data from the US Census Bureau, American Community Survey (ACS), 2012–21; US Department of Agriculture, Commuting Zones and Labor Market Areas, 2012; US Department of Education, Integrated Postsecondary Education Data System (IPEDS), 2019–21; and GUCEW State Job Projections data set, 2023.

Note: Values may not sum to 100 percent due to rounding.



*The Great Misalignment: Addressing the Mismatch between
the Supply of Certificates and Associate's Degrees and the
Future Demand for Workers in 565 US Labor Markets*

can be accessed online at
cew.georgetown.edu/GreatMisalignment

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