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BUILDING AN EVIDENCE BASE FOR THE BUSINESS CASE FOR APPRENTICESHIPS

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Executive summary

Support for expanding apprenticeships in the United States is growing, but low employer participation remains a significant barrier. Employers interested in apprenticeships often ask, "What's my expected return on investment?" This report draws on a literature scan and qualitative interviews with subject matter experts and employers to understand the business case for apprenticeships.

Given wide variation in outcomes and inconsistent definitions of apprenticeships in the U.S., aggregate return on investment (ROI) estimates offer limited value to prospective employers. Drawing meaningful comparisons remains difficult. Measuring employer ROI has also proven more challenging than researchers expected. While direct costs and benefits are well established, researchers struggle to quantify indirect benefits (improved retention, reduced hiring costs, better quality) and collect reliable data from employers. Many benefits emerge after program completion, yet traditional ROI formulas focus on short-term returns.

For all the above reasons, intermediaries should avoid relying heavily on aggregate ROI numbers, which can convey false precision about what any specific employer will experience. Rather than asking what the ROI will be, the better question is "under what conditions could my organization optimize ROI from apprenticeships?"

The good news is that employers and their partners can actively design programs to optimize ROI. Decades of Swiss and German research offer a roadmap, and three insights stand out. First, reduced hiring costs provide a powerful return on apprenticeship investment. Second, aiming to break even before program completion reduces poaching concerns—a key barrier for employers. Third, program design factors profoundly influence outcomes; time spent in productive workplace activities, program duration, and curriculum structure all matter enormously.

We cannot simply transplant international models to the U.S. context. But these insights point toward design principles worth testing: identifying employers positioned to benefit most, helping them design for optimal ROI, and advocating for policies and program features that improve the value that employers derive from partnering with educators and intermediaries.

Building a stronger evidence base on the business case for apprenticeships is necessary to communicate effectively when and why apprenticeships make sense for employers. That will require more foundational research and better data infrastructure, including shared definitions, standardized metrics, and employer tracking tools. Crucially, we need greater consistency in what "apprenticeship" means in order to enable meaningful comparisons. But we can't wait for perfect data.

This report presents a framework for iterative learning: pilot program designs, gather data, refine approaches, and build better tools. Priority research areas include rapid-cycle testing of program design features, comparative analysis of the costs and benefits of different talent pipelines, and more systematic, industry-specific studies of how apprenticeships create value for employers.

We can build on international evidence to generate theories, develop comparative research, and learn from their data collection strategies and methods. Three key findings from our interviews and literature scan are:

1. A positive ROI for business is possible, but not universal—and there are multiple paths to a business case.
2. The biggest benefits are often hardest to measure, so ROI alone may not be the best metric to capture the actual business case.
3. We need better evidence, but we can't wait for perfect data.

The report concludes with recommendations for intermediaries, policymakers, funders, and employers to build the evidence base of what works for employer ROI iteratively over time. Intermediaries should focus on identifying which companies can benefit most, what design features improve employer ROI, how to make sure employers are not taking on unnecessary costs, and providing insights to educate employers about how to optimize the value employers get from participating in apprenticeships.

In short, instead of asking "what's the ROI?", ask, "Under what conditions can firms get a positive ROI?" and "What types of firms have the most to gain from apprenticeships?" Focus on breaking even by program completion to protect against poaching. Additional benefits accrue over time—measurable or not. Tailor messaging about the business case to the pain points of specific firms; apprenticeships are not right for every firm, but they are starkly underutilized in the U.S. as a talent strategy. Expanding the participation of employers in the apprenticeship system also means expanding opportunities for American learners and workers.

Introduction

There is growing support for expanding apprenticeships in the U.S., but low employer participation is one of the biggest barriers to expansion—especially in modern industries where apprenticeships are still uncommon, such as technology, health care, and pharmaceuticals. When approached to partner on apprenticeships, the first question that employers who are new to apprenticeships tend to ask is "what is the return on investment?"

Although several studies show promising ROI results, the U.S. lacks the evidence base to provide reliable estimates.[1] [2] [3] [4] Programs vary enormously, most employers don't track the necessary data, and we lack the systematic data collection infrastructure that countries such as Switzerland, Germany, and Austria have.[5] [6] [7] Rushing to produce ROI numbers before building a stronger foundation of consistency in the field risks generating unreliable estimates that could ultimately undermine employer confidence in apprenticeships as a talent strategy.

Our interviews with researchers who have conducted ROI evaluations suggest an evolution in understanding about the business case among employers. Employers new to apprenticeships tend to focus on costs versus productivity in the short term. But employers who have been running programs for years tend to emphasize long-term benefits such as improving retention and morale, building talent pipelines for the future, and developing the specific skills their company needs that can't be found in the labor market. These employers have shifted from transactional cost-benefit thinking to strategic workforce investment. This presents a challenge for those trying to recruit new employers to hire apprentices: How do you convey the value in ways that will resonate with employers who are primarily focused on minimizing short-term costs?

This report attempts to unpack this challenge and recommend some paths forward, starting with a landscape scan of what we know about the business case for apprenticeships. We conducted a literature review and 23 interviews with subject matter experts and employers to answer:

- What does the evidence say?
- What makes measurement of employer ROI challenging?
- How can we build a stronger evidence base over time?

The report examines both how to measure the financial returns and how to understand the value proposition for employers more broadly. It provides insights for intermediaries working with employers and outlines a framework for building stronger measurement infrastructure over time.

We start by examining what existing research tells us about employer ROI—both the numbers and the measurement challenges. We then explore why traditional ROI metrics alone miss much of what employers value most about apprenticeships. Next, we analyze lessons from Switzerland's more rigorous evidence base about designing for ROI. Finally, we outline a framework for building a stronger U.S. evidence base that helps employers make better decisions about apprenticeship investments.

Existing evidence: What the numbers show

A handful of studies have investigated employer ROI for registered apprenticeship programs in the U.S. A 2016 Department of Commerce study also made significant contributions by generating rich qualitative case studies that examine the mechanisms driving the business case for apprenticeships, profiling firms in different industries.[8] The Urban Institute conducted the most comprehensive and oft-cited study to date, which was part of a larger evaluation of the Department of Labor's American Apprenticeship Initiative grant.[9] There have also been several state-level studies, including in Oregon, Kansas, North Carolina, and South Carolina.[10] [11] [12] [13] CareerWise USA conducted a preliminary ROI study for youth apprenticeships, whereas the other studies are predominantly focused on adults (the studies in South Carolina and North Carolina included youth apprentices in the analysis as well).[14] [15] [16] The recent surge in studies suggests a growing interest in measuring the employer ROI for apprenticeships, but the evidence base remains limited, unsystematized, and fraught with data collection challenges.

Table 1 shows that most employers obtain a positive ROI in the U.S. in the post-program period, but the outcomes within and across studies vary dramatically, and a positive ROI is not guaranteed. There is also substantial variation in ROI across companies in the same occupation and program, and even more across occupations. Although we should not expect all employers to break even from their investments in apprenticeships, we would want to see the average or median employer break even, if not get a positive ROI either at program completion or shortly thereafter.

Table 1.

Headline results from selected apprenticeship ROI studies

Study	**Sample size** (employers)	**ROI at completion** (for every $1 invested)	**Post-program ROI** (for every $1 invested)	**When employers break even**
Kuehn et al., 2022	68	Net negative	Median: $1.44 at five years (cumulative)	38% at completion 68% by five years post-program
Duncan et al., 2025 (Kansas)	18	Roughly break even	Median: $1.06 at one year $2.49 at five years	56% at completion; 67% by five years post-program
North Carolina Community College System and North Carolina Department of Commerce, 2020	42	Average: $1.70; median: $1.74	Not reported	86% at completion; 94% by two years post-program
Von Nessen, 2024 – Adult (South Carolina)	121*	Net negative	Average: $1.32 at five years	~Five years after hire
Von Nessen, 2024 – Youth (South Carolina)	43*	Net negative	Average: $1.37 at four years	~Four years after hire (faster than adult)

Note: This table features studies that have larger sample sizes. The Kuehn et al., 2022 results are those that include direct and indirect benefits. Results from other studies only include direct benefits. The results reported from the Kuehn et al., 2022 and Duncan et al., 2025 studies are based on "medium estimates" of productivity.

*Of the 165 firms that responded to this study's survey, 73.3% had an active adult apprenticeship program and 26.1% had an active youth apprenticeship program. Some firms may have both adult and youth apprentices.

Due to the high level of variation, premature reliance on aggregate estimates could backfire—setting unrealistic expectations for employers whose situations may differ dramatically from the average. This suggests that the question "what's the ROI?" can't be answered meaningfully with the evidence currently available.

Factors that policymakers, program designers, employers, and intermediaries can control appear to be very influential in employers' outcomes, such as the type of work, program design, industry, supports available from partners or grant programs, and local labor market conditions.[17] The time horizon for calculating ROI is also an important factor.[18] Some employers that took years to break even still had sufficient justification to invest long term, such as improving retention and reducing hiring costs. In an interview, expert Katie Caves said, "There's more variation at the occupational level than there is at the level of firm size or the other things that people usually bring up. The occupation is enormously important."

In Switzerland, each occupation has a set apprenticeship curriculum, length, and amount of work-based learning, so there is more consistency within occupations than across (this may not be true in the U.S. due to a lack of standards). Also, more dangerous occupations for apprentices or occupations with high safety risks for consumers take longer to put apprentices into productive work. Caves explained, "In occupations where there's a high risk of injury or damaging expensive equipment, apprentices typically train in a safe but almost unproductive environment for the first year. That changes the calculus in those occupations in a way that is not a problem, it's just a difference."

U.S. leaders visit the warehouse for a major food retailer in Zurich, Switzerland that hires apprentices. | **Photo credit:** Mike Ebner / ETH Zürich, Chair of Education Systems

Why is there so much variation in results within ROI studies?

A complex set of internal and external factors influence whether an employer has a net cost or net benefit at the time of training completion, so some level of variation is expected.

The definition problem: ROI may vary even more in the U.S. because apprenticeships mean different things to different people. Even within the same occupation, some apprenticeships are six months long (akin to extended internships), while others are rigorous, four-year applied degree programs. Without national definitions and standards to ensure more consistency, new employers will continue to struggle to understand what they're being asked to do, the costs, the benefits, and how it compares to current talent strategies.

Key insight: It's hard to measure ROI for apprenticeships when employers aren't measuring the same thing.

Multiple paths to a business case: Not all firms pursue apprenticeships for the same reasons. Swiss research shows some employers use apprentices as productive workers from day one, achieving a positive ROI quickly (especially smaller businesses). Others make longer-term investments in talent development, with returns coming from reduced hiring costs and stronger retention outcomes over time.[19] [20] Which path works best will depend on the occupation, work processes, and labor market conditions.

Key insight: The right question isn't "what is the ROI for apprenticeship?", but rather "what conditions would enable my organization to generate a positive ROI?"

Employer-serving intermediaries and employers should refrain from putting too much emphasis on the medians and averages in the U.S., because a specific employer's situation may be very different, and it sets high expectations that may not pan out. We also discourage emphasizing the five-year ROI figures alone, because it is such a long time horizon and may not be very precise for an individual firm. Instead, intermediaries should focus on conveying how important program design is for optimizing ROI (with suggestions for doing that), and that costs will stabilize over time as the program matures.

Measurement: Consensus and challenges

Although U.S. studies of employer ROI may have different methodologies, there is broad consensus about the core factors to measure.[21] [22] [23] The most important direct costs are:

- Apprentice wages and compensation (the most significant cost factor)
- Training costs, including supervisor/mentor wages and their loss of productive time
- Infrastructure, equipment, and administration

Startup costs can be high for employers that have never hired apprentices before, although there is very limited systematic research on what those costs are and how long it takes to stabilize them. This means that it can be hard for employers to plan for upfront costs or set realistic expectations about the timeline for recouping them. Even if an intermediary is available to support the employer with program design and other administrative functions associated with startup (such as registering a program, developing curricula, setting up a hiring process, and identifying training providers), the lack of awareness and consistency can overwhelm many businesses—especially those that are small or not familiar with how to design a program to optimize their ROI and develop quality training. Intermediaries, peers, and partners with apprenticeship experience can play a valuable role for employers in minimizing startup costs.

One employer we interviewed said that when other employers ask them about startup costs (a question that comes up often), they emphasize that the costs are front-loaded. For that reason, they encourage their peers to focus on using apprenticeships to address a business need, rather than just a corporate responsibility (charity) investment:

"The [startup] costs are really in the resourcing, the [staff] time it takes to develop a program. So we talk oftentimes about how you need to anchor this program to a business need…to make the costs worthwhile: Where are you seeing a need within your organization? And leveraging the [apprenticeship] program to offset the need."

They also leverage junior staff as supervisors as opposed to more expensive senior staff, which gives the junior staff professional development opportunities and helps keep early-program costs down.

The most important direct benefit is apprentice productivity, which increases over time and is particularly challenging to measure.[24] As one researcher put it, "Measuring productivity is notoriously hard…You can try to measure it somehow…[or] you tap into the expertise of the people you're asking." Researchers frequently measure apprentice productivity by asking employers to estimate it as a percentage of the productivity of a fully qualified worker in the same occupation, and then multiplying the differential by the wage of the fully qualified worker.[25] [26]

Indirect benefits are those not related to apprentices' productivity, but which affect the employer's bottom line—including cultural, strategic, and organizational benefits that may or may not have a measurable financial impact.[27] Researchers do not seem to agree on how to factor in indirect benefits, how to present results, or at what points in time to

assess ROI. Some of this variation is expected because apprenticeship ROI measurement is still a relatively new field in the U.S., warranting experimentation. In addition, the studies tend to be for specific grants, programs, or states, so they are constrained by the more limited scope than a national data collection infrastructure would bring.

Researchers differ in terms of how and what to include in the ROI formula for indirect costs and benefits. Indirect benefits—or the benefits beyond the value of productive output, such as improved company culture and increased innovation—are often difficult to monetize and not exhaustive (there is no definitive list of all indirect benefits that all employers experience).[28] In an attempt to improve the accuracy of ROI estimates, some researchers have attempted to measure select indirect benefits by their own methods, but the selection of different indirect benefits and approaches substantially influenced the results.[29] Calculations that exclude indirect benefits result in negative or smaller ROIs than those that include indirect benefits, especially over longer post-program periods.

Another challenge is that the goals of analyzing ROI may be different: calculating ROI as a transactional metric for employers to assess their financials (typically more short-term in nature), versus conducting scientific research on the broader effects of apprenticeships on company outcomes (innovation, retention, managerial skills, etc.) at different stages over time. We need both.

Measuring ROI proves harder in practice than it appears. The subject matter experts we interviewed identified several persistent challenges:

Lack of definitions and consistency. Without national definitions and occupational standards, "apprenticeship" means different things: six-month internship-like experiences versus rigorous four-year programs; youth versus adult; registered versus non-registered; with or without degrees. This variation makes apples-to-apples comparisons nearly impossible.

Sectoral differences. Construction and manufacturing have apprenticeship infrastructure and can estimate productivity more easily. In health care, technology, and other services (which do not have as long a history with apprenticeships), there is inconsistent infrastructure, and productivity is harder to quantify, especially for quality dimensions of work rather than quantity.

Long-term, hard-to-measure benefits. The benefits that may matter most emerge over time and resist easy quantification: productivity gains, stronger talent pipelines, reduced turnover, improved morale and culture, heightened innovation capacity, reduced future hiring costs, and operational flexibility. This is explored more in depth in the next section.

Employer data collection gaps. Most employers don't systematically track the costs and benefits of their talent strategies. [30] [31] [32] Response rates to researchers' cost-benefit surveys of employers are low (around 20%), and there's no standardized data collection method or agreement on how to streamline collection without sacrificing quality. The Registered Apprenticeship Partners Information Database System (RAPIDS), the federal data system for administering registered apprenticeships, doesn't collect data on apprentice earnings outcomes beyond program exit dates (to capture post-program outcomes) or data on unregistered apprenticeships.[33] State wage records (collected for

unemployment insurance) don't track apprenticeships, so the earnings data are not reported there either. Because these key data sources in the U.S. have limited use for ROI calculations, researchers tend to rely heavily on surveys and other primary research such as interviews, which can be costly to implement.[34]

One challenge researchers face is balancing standardization with practical applicability. Swiss expert Stefan C. Wolter emphasized this tension in an interview:

"We have to have a high standard in order to be able to compare across industries and across professions, but the questionnaire must reflect the daily reality that the firms…that these people in these firms…face. If it does not, the firms will simply not be able to answer, or they answer, and it's even worse. They make their own reasoning of what the question means, and it may be not the same reasoning as others do."

The level of diversity in language related to occupations (referred to as "professions" above) may vary even more in the U.S. than it does in a country with national standards, so this insight is likely to be an important consideration for U.S. survey designers.

U.S. leaders attending the CEMETS Summer Institute at ETH Zurich in June, 2025. | **Photo credit:** Mike Ebner / ETH Zürich, Chair of Education Systems

Tracking employer costs and benefits in Switzerland

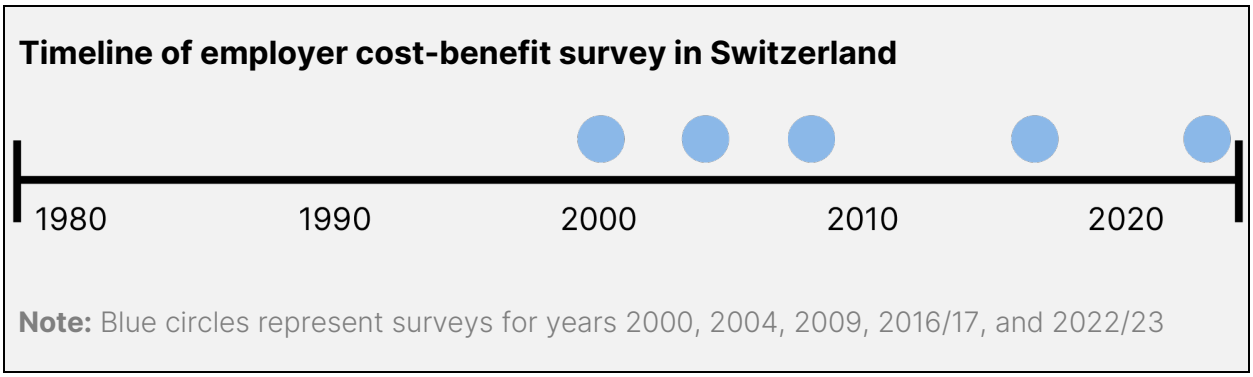
Switzerland hasn't always collected cost and benefit data for firms investing in apprenticeships. In 2000, Germany approached Switzerland and Austria to propose a study of firm-side costs and benefits, the results of which could be compared internationally. Germany had already developed most of the survey instrument, but Swiss experts helped improve the side of the survey instrument aimed at capturing benefits and adjusted it to Swiss contexts.

Switzerland conducted its first round of data collection that same year through postal questionnaires that took firms about four hours to complete. In addition to the fact that the government paid for the survey, participation rates were high due to the survey's semi-official character, as the experts partnered with the federal statistical office from the outset, and because firms were interested in seeing otherwise nonexistent data that could help them justify their expenditures to CFOs.

After each round of the early surveys, researchers released a book explaining what they did, how they did what they did, and why in terms that employers could understand. The books also showed employers what information they could collect internally to calculate their own ROIs. Since 2000, Switzerland has conducted four more surveys. While the questionnaire is now provided online instead of on paper, it remained largely consistent until the most recent version, which was streamlined to shorten the length and improve the response rate.

Impacts

- **Employers strengthened their capacities for internal data collection**. Improved firm practices around data collection became an unintended consequence of accepting Germany's request. When Switzerland first conducted the survey in 2000, less than 0.05% of participating firms said that they internally accounted for costs and benefits. Less than a decade later, about 40% of participating firms said that they had installed an internal monitoring system, and another 20% said that they wanted to install a system.
- **Employers started thinking more about the benefits beyond the accounting framework**. By describing what they did, how they did what they did, and why in terms that employers could understand, researchers provided employers with language to talk about the benefits of apprenticeships and argue their value in terms that CFOs could recognize.



Ignoring the "counterfactual." Helper et al. (2016) argues that in order to properly evaluate employer ROI, cost and benefit values should be made relative to the "counterfactual," or the alternative hiring method. While some studies have broadly asked employers about their alternative options, few have captured these alternatives numerically in ROI calculations.[35] [36] [37] [38] Pursuing these questions would reorient research toward a more scientific understanding of the value to businesses, going beyond the scope of ROI as a traditional accounting and finance metric.

In addition to these high-level challenges, the literature and interviews also revealed some methodological issues with specific elements of the ROI calculation, such as the subjective nature of asking employers to report productivity gains across two points in time retrospectively (which introduces recall bias); data that are unavailable, such as who pays for related technical instruction; whether collaborations with intermediaries or other partners reduced specific costs (e.g., serving as employer-of-record would reduce some of the wage costs on the employer); arbitrarily chosen discount rates to account for the time value of money; and poor question validity for some survey questions, such as whether an employer understands how to interpret a "fully qualified worker."

Taken together, these challenges point to a deeper issue: The ROI metric itself may not be enough on its own to capture the full range of benefits that employers receive from apprenticeships.

Beyond the bottom line: Why the standard ROI doesn't tell the whole story about apprenticeships

Although there is broad agreement on the direct costs and benefits that influence employer ROI, the research community is still debating how to measure and when to include indirect costs and benefits in ROI calculations. There is also a lack of evidence on startup costs and how long it takes for employers to stabilize the cost of a new program before ROI metrics can reasonably be assessed.

Research increasingly shows that the hardest-to-measure benefits matter most, and these benefits tend to improve significantly for employers over time, especially if the apprentice stays with the employer after completion.[39] [40] [41] Employers consistently report that apprenticeships deliver value in ways that ROI metrics don't easily capture: improved employee loyalty, stronger workplace culture, better talent pipelines, and reduced

turnover. Helper et al. (2016) argues that excluding these factors is problematic: "Leaving out a hard-to-measure cost or benefit is equivalent to assuming its value is zero."[42]

A survey of 280 employers in North Carolina found that only 32% performed regular financial analyses of their programs, suggesting it is not an important metric. Despite this, 82% said that they were either somewhat or very satisfied with their program's financial impacts on the company, and many employers named specific benefits.[43]

A prominent study's approach to measuring indirect benefits

The research team for the Urban Institute's American Apprenticeship Initiative study asked employers to assign a value to each of the 10 indirect benefits listed below relative to the value of increased productivity.[44] The value of each indirect benefit was then divided by the number of apprentices employed. The study's authors noted that there are limitations to this approach of linking the value of the program's overall indirect benefits to the productivity of a specific apprentice. Specifically, it could result in an underestimation of gains to employers, particularly those with more apprentices.[45] This illustrates how technically challenging it can be to measure certain benefits.

Quantified indirect benefits

- Improved pipeline of skilled employees
- Stronger employee engagement and loyalty
- Reduced turnover
- Improved company culture
- Reduced downtime
- Development of future managers
- Improved productivity of coworkers
- More on-time delivery
- Product or process improvement
- Reduced use of overtime

What employers had to say

In our interviews, employers were aware that apprenticeships are a long-term investment; for some, that was what made them hesitant about whether it would work out for them. None of the employers were asking, "Will this investment pay off in year one?" Instead, employers were asking:

- "Is this cheaper, in the big picture, than my current talent strategy?"
- "What happens if I don't invest in training?"
- "How might apprenticeships address talent challenges I can't solve otherwise?"
- "How can apprenticeships support my organization's long-term success?"

One technology employer put it bluntly: His goal was to "fail cheaper." He knew from experience that hiring skilled talent came with high failure rates, and turnover brought

substantial costs. Apprenticeships would achieve the same outcome—finding talent that was the right fit—at a lower cost. The comparison wasn't between apprenticeships and doing nothing; it was between apprenticeships and expensive mis-hires.

A health care employer we interviewed saw a different counterfactual: Not investing in training could hurt their ability to innovate and maintain quality of care. For them, apprenticeships weren't just about dollars saved—they were another approach that could help them improve quality and stay competitive.

The unmeasurable benefits become particularly stark in high-stakes occupations. In an interview, apprenticeship expert Robert Lerman explained this through a hypothetical police officer trained through an apprenticeship versus one trained in the traditional way:

If that apprentice-trained police officer did a little bit better in avoiding an accident or avoiding shooting somebody inappropriately or something…it's more than enough to pay for years of the program. So there are these idiosyncratic things that are, again, very hard to measure, but that doesn't mean they're not real.

This observation highlights the importance of quality and rigor in apprenticeships as part of the value proposition. If hands-on learning is done well, it can make a tremendous difference in specific life-or-death situations.

What this means for measurement

Short-term ROI calculations that emphasize direct costs have their place—they're one useful data point. But relying on them alone gives an incomplete picture of apprenticeships' value to employers. To understand the real business case for apprenticeships, we need:

- Methods that capture indirect benefits, including long-term impacts and those that are inherently difficult to quantify (i.e., qualitative benefits).
- Comparative analyses that show how apprenticeships stack up against other talent strategies over time.
- Ways to account for the cost of not investing in apprenticeships when it would be a good fit (e.g., lost competitiveness, quality declines, missed innovation opportunities).
- More investigation into startup costs for employers and how long it takes to stabilize costs so that employers can set realistic expectations and plan accordingly.

Without a broader research agenda and metrics, we risk missing the forest for the trees. We might conclude apprenticeships don't "pay off" based on narrow calculations, even when some employers are enthusiastically voting with their feet because they see clear value that traditional ROI formulas don't capture.

What this means for intermediaries working with employers

Intermediaries should not rely too heavily on aggregate ROI numbers to predict what a specific employer will experience, because it could convey false precision. Instead, they should:

- Connect employers with peers in their industry who can speak from experience.
- Focus on understanding an employer's talent pain points first to understand if or how apprenticeships may be suitable.
- Help employers build capacity to track their own costs and benefits.
- Emphasize the importance of hard-to-measure benefits.
- Be honest about longer time horizons for apprenticeships' benefits and startup costs.

The goal isn't to sell employers on apprenticeships with promising numbers—it's to help them determine whether apprenticeships fit their specific talent challenges and, if so, to design programs that maximize value for both employers and apprentices.

Designing for ROI: What can we learn from Switzerland?

While it may be a while before the U.S. has ROI estimates that meaningfully predict a given employer's returns, that's actually good news. It means that if we build the evidence base on what works, employers and their partners can actively design programs and support systems that deliver strong value for employers and apprentices alike—and scale high-quality apprenticeship opportunities in the process.

There is a strong body of research in Switzerland and Germany on employers' willingness to train, which can provide initial guidance about how we might design an apprenticeship ecosystem that optimizes ROI for employers, apprentices, and society. Countries such as Germany, Switzerland, and Austria have been collecting systematized data from employers on a regular basis for more than two decades (using similar surveys, so cross-country comparisons are possible). These countries collect regular information about costs, benefits, earnings, and retention outcomes for apprentices, and it is analyzed at the occupational level. In Switzerland, the Swiss Federal University of Vocational Education and Training publishes the results in public reports.[46] The data inform decisions that firms, government officials, education and training providers, and professional associations make about how to update and optimize the vocational and professional education and training (VPET) system. The box below summarizes key insights from this literature that may have relevance in the U.S.

Learning from international evidence

While the U.S. cannot simply copy the Swiss and German apprenticeship systems, we can learn from their insights:

Reduced hiring costs is a powerful benefit. Swiss research on firms' willingness to train shows that when hiring highly skilled workers is costly or difficult, firms are more likely to train (even with a negative ROI at program completion).[47] This may apply in the U.S. when employers face high hiring costs due to tight labor markets for hard-to-fill positions.

Implication: If an employer spends heavily to recruit highly skilled workers or struggles to retain them, apprenticeships could generate long-term savings and improve quality.

Design programs to break even before completion to minimize poaching. If an employer breaks even before training ends, poaching risks become far less consequential.[48] Even if some apprentices leave, the employer has already recouped the investment. Two-thirds of Swiss firms at least break even during training, and one of the key drivers is engaging apprentices in productive work quickly (for other program design factors, see the next insight below).[49] Even at Swiss training centers, employers assign real tasks under supervision, not practice exercises.

Implication: Breaking even during training is the most effective protection against poaching concerns, making apprenticeships viable even in competitive labor markets. Frame apprentices as productive workers who are learning, not cost centers, and assign productive tasks as soon as safe and practical.

Program design matters enormously. Wages, duration, time in the workplace, time in productive tasks, quality of the trainer, and other factors significantly affect ROI. Swiss simulation studies found that varying apprentice wage structures, program duration, and training intensity have a significant effect on whether firms were willing to train apprentices (Muehlemann and Wolter 2014). When data show low ROI for an occupation, Swiss professional associations advocate to adjust program parameters—extending program length, restructuring wage progression, or redesigning work-learning balance.

Implication: Program design and other factors (labor market, business cycle, policy environment, etc.) impact ROI. Start piloting program design features that firms can control. Build in mechanisms for tracking costs and benefits to achieve continuous improvement.

Important caveat: These insights may not translate directly. The U.S. has less standardization, weaker apprenticeship awareness, different labor regulations, and more diverse regional markets. However, international research demonstrates what becomes possible with a strong evidence base—and helps us map a research agenda to test what works in our own context.

Recommended reading: Backes-Gellner, U., U. Renold & S. C. Wolter (Eds) 2020, "Economics and Governance of Vocational and Professional Education and Training (Including Apprenticeship)." Zurich: hep.

Any firms that break even before program completion obviously have a business case to train apprentices, which in Switzerland is two-thirds of companies that train apprentices.[50] The firms that benefit most from apprentice training are those that can achieve that while also having high hiring costs and struggling to find skilled workers on the external labor market.[51] Firms that have net costs at completion and low hiring costs are the least likely to benefit from investing in apprenticeships.

What this means for intermediaries working with employers

There is no single business case for apprenticeships. Different types of employers can have a vastly different ROI and take different paths to achieve the same ROI.[52] Intermediaries working with employers can focus on identifying the employers that have the most to benefit, helping employers design to optimize their ROI and advocating for program design features that foster ROI when collaborating with education providers and policymakers.

Based on the international evidence, intermediaries trying to recruit new employers can focus their efforts on identifying firms that meet at least one of the two pathways to an ROI:

1) **Production-oriented training strategy**: Apprentices pay for themselves during training
    - Apprentices engage in productive work fairly quickly
    - Organizations with the flexibility to substitute tasks can integrate apprentices into productive work easily
    - Common in construction, manufacturing, and skilled trades, and important for smaller employers

In our interviews, a researcher in Switzerland said many employers tend to see the costs clearly, but not necessarily the benefits. He gave an example of a cabinetmaker he met with who struggled to understand how they benefited from apprenticeships. Using the data, he explained to the cabinetmaker that having an apprentice on their team allows them produce the same output at a lower price, compared to a team with three fully trained professionals. Their benefit is that they can offer a lower price to consumers.

2) **Investment-oriented training strategy**: Training costs are worth it to avoid expensive hiring
    - Invest more in training upfront, but save money through reduced hiring costs and higher retention
    - Common in health care, some IT roles, and specialized manufacturing

A health care employer emphasized the long-term necessity for them to train their employees, not only to retain them but also to compete on quality of care:

“If we're not providing training and upskilling to our staff, we're not investing in them becoming better at whatever they’re doing, and if they're not becoming better at what they’re doing, they’re either stagnating or becoming worse. And so [by] not staying relevant…we risk having poor patient outcomes and then even further down we see fewer patients.”

Research on indirect benefits reveals an unexpected finding: Employers rated managerial workforce development as one of the highest-value benefits. As researcher Becca Huntting from CareerWise New York explained, "[Employers] were weighing that very high. This was not just an entry-level talent solution, this was a way for the company to invest in their managerial workforce and their skills as well." We interviewed an employer that leverages apprenticeships to provide more professional development opportunities to junior staff; they also noted the importance of providing training to those new supervisors to ensure quality supervision.

For some employers, investment-oriented training becomes a necessity when the external labor market cannot provide the skills they need. A manufacturing employer in Oregon explained that while the company calculated a negative in-program ROI, it continues to invest in apprenticeships because it wouldn't be able to hire the workforce that it trained internally otherwise.[53] When a firm cannot find qualified workers on the labor market, an apprenticeship structure is likely to be more cost-effective than training at a professional wage for an extended period.

This long-term orientation is consistent with the investment-oriented model that Blatter et al. (2016) found strong evidence for in Switzerland: Reducing high hiring costs is a significant motivation to train apprentices, even when firms cannot achieve an ROI by program completion.[54]

What types of employers benefit most from hiring apprentices?

Strong candidates for apprenticeships

- Struggling to hire qualified workers
- High turnover in skilled positions
- Unique, firm-specific elements to the work (extensive onboarding)
- Value building from within, employee engagement, developing a learning culture
- Can retain the apprentice after completion or break even before the end of the program
- Medium-sized or larger employers (over 50 employees)
- More mature employers (over five years, stable businesses)

Apprenticeships let you grow your own talent, reduce turnover, and build a workforce adapted to your specific environment.

Weak candidates for apprenticeships

- Hiring skilled workers is easy in employer's area (deep talent pool, low hiring costs)
- High turnover driven by factors such as low wages, weak management, and poor working conditions
- Employers focused only on short-term hiring needs
- Very small firms, unless they obtain support from an intermediary or multi-employer group to share costs

Apprenticeships don't help the business save on hiring costs, fix retention problems, or address short-run talent needs.

Source: Blatter et al. 2016, Kuehn et al. 2022, Payne et al. 2000, Rupietta & Backes-Gellner, 2019

It is unclear to what extent the findings from Switzerland and Germany can carry over to the U.S. context. There's an opportunity for researchers to make a significant contribution to what we know about the business case for apprenticeships by investigating that. In the meantime, intermediaries can support employers by helping them iterate on the optimal design of an apprenticeship program that suits their business model, talent challenges, and local conditions. For example, they can strategize with employers about how to reduce costs, increase the productivity of apprentices, or engage with them in rapid-cycle learning to tweak different elements of the program (such as the share of an apprentice's time spent per week in the workplace and program duration) to see what effect they have on ROI and broader perception of the program.

Wages are the most important cost factor, but they are also important for attracting quality apprentices. Apprentice wages should be set low enough to keep costs down for the employer, but high enough to attract and retain apprentices so that they don't switch to another job that pays more. Youth apprentice wages may be lower than adult wages given their limited work experience, though this must be balanced against the additional supervision costs. Intermediaries can work with employers to identify what the right combination of wages and mentor/supervisory support is necessary and attractive for talent—or experiment with creative solutions if it is permissible, such as having more senior apprentices do some of the extra mentoring and support.

In the U.S., it is often unclear who pays for training costs—sometimes it's the employer, the apprentice, a scholarship, public funding, or some combination. This lack of clarity and the high cost of higher education in the U.S. make training costs a significant consideration for employers. Here are some steps that intermediaries and policymakers can take to reduce the employer's burden of paying for classroom training and enable them to share the costs of occupational training (related instruction):

- Public formula funding (e.g., California has this for community colleges to provide related instruction), public-grant-based aid (e.g., Pell Grants), and/or financial aid eligibility to support classroom instruction for apprentices
- Small firms can pool funds to share trainer costs (e.g., in training centers) and reduce administrative burdens on employers (see box below)

Some states and regions are already pursuing both of these strategies, but making it a broader priority would enable employers to focus their resources on apprentice wages and on-the-job training and supervision.[55] [56] These strategies are particularly important for encouraging more small and medium-sized companies to hire apprentices.

The group sponsor model in South Carolina

What is it?

South Carolina has a "group sponsor model"—a form of multi-employer organization that enables employers hosting apprentices from the same industry sector/occupation to voluntarily share resources in order to reduce costs and administrative burdens for individual employers and scale apprenticeship opportunities. An intermediary, such as a community college or industry association, handles the group sponsor's administrative functions, including reporting data to RAPIDS and coordinating with apprentices and participating employers.[57]

Who should consider the model and why?

While firms of any size can participate, the group model is particularly beneficial for **talent-seeking small and medium-sized firms** that might not have been able to afford to invest in apprenticeships alone. For example, small firms typically can't afford to run a training course for one or two apprentices. However, if that firm partners with several other firms needing one or two apprentices in the same occupation and the group agrees on foundational curricula, then the group can run a course for the cohort and share the costs.

The group sponsor model has helped reduce the costs of hiring an apprentice in South Carolina. Examples include:

- **Trident Technical College** in Charleston identified a local need for skilled talent, but these small companies could not support a full cohort of apprentices to run classes. Trident Tech now regularly gathers three to 10 employers in group sponsor models in each of the school's 13 to 15 occupations and pathways.
- The **South Carolina Automobile Dealers Association** has a staff member whose role is largely dedicated to administering the group program for a network of automobile dealerships, hosting about one to two apprentices each. The staff member manages coordination between dealerships and apprentices, handles the RAPIDS registration component, and works with the colleges to secure program funding.

The state is exploring how this might apply to talent for emergency medical services and other fields.

Based on the international evidence, intermediaries can also start to pilot whether the following apprenticeship designs tend to improve the employer ROI in the U.S. as well:

- Longer program duration (optimize the period of recouping costs after apprentices start to pay for themselves; productivity exceeds apprentice wage)
- Increased time in the workplace
- More time in productive and skilled work (maximize training quality)
- Front-loading off-the-job learning so that more time is spent in the workplace at the end, when apprentices are more productive

An important caveat for intermediaries seeking to help employers optimize ROI is that over the long term, the goal is not necessarily to optimize ROI for employers alone, but to balance the needs of multiple stakeholders and make sure it is attractive for each stakeholder to participate. Without buy-in from key players (employers, apprentices, intermediaries, etc.), the system as a whole will not function well, and everybody loses.

Several states are also working toward an even stronger, state-level systems approach to scaling apprenticeships, with harmonized definitions and standards for each occupation and statewide industry talent associations involved in shaping the curricula. In the long term, it will be important to ensure that these emerging state-level systems can also operate across state lines, such as for employers with locations in multiple states or apprentices who move across state lines to have their learning recognized.

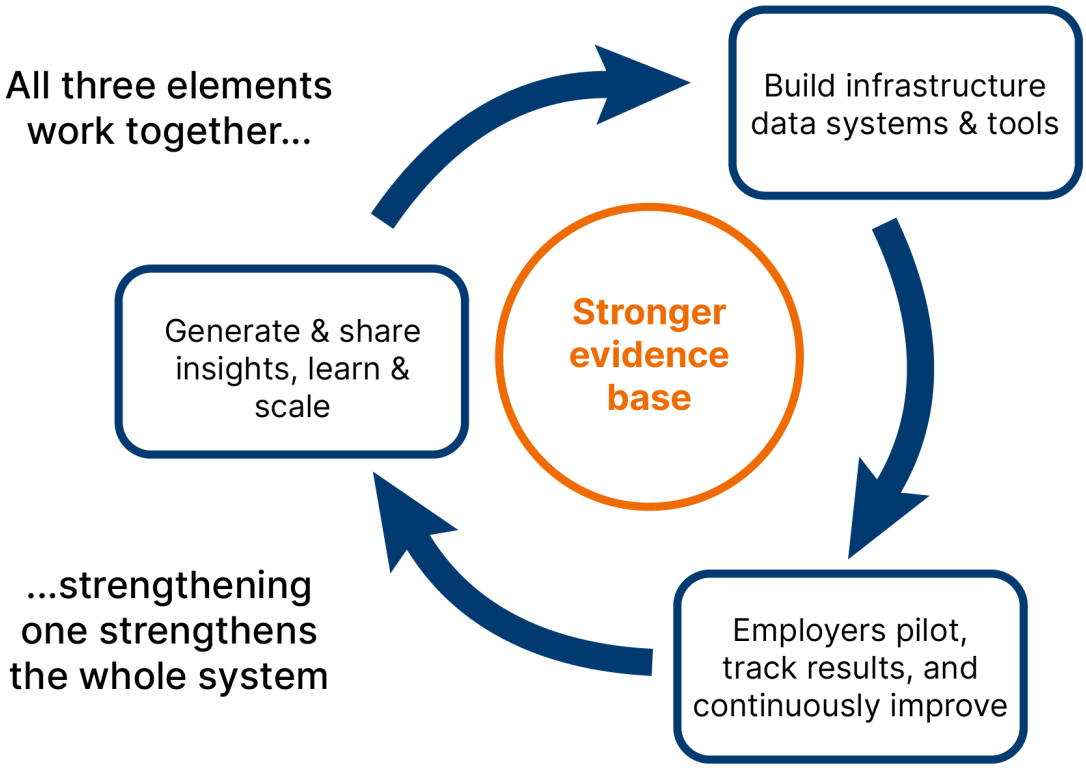
U.S. leaders attending the CEMETS Summer Institute at ETH Zurich in June, 2025. | **Photo credit:** Mike Ebner / ETH Zürich, Chair of Education Systems

Building a journey map to a stronger evidence base

There is a robust body of evidence from Switzerland and Germany that can provide useful insights, but ultimately, the U.S. needs a stronger evidence base to understand the business case in our setting. This section offers a framework for the journey ahead.

Figure 1.

An iterative approach to building evidence on what works



FOUNDATION: NATIONAL DEFINITIONS & STANDARDS

National definitions and standards

One of the most fundamental barriers to building a stronger evidence base is the lack of consensus on what "apprenticeship" even means. This confusion creates friction across the ecosystem and undermines both awareness and coordination. Without clear, consistent definitions of the spectrum of work-based learning opportunities (how they are distinct from each other and progressions between them), we will continue to struggle to meaningfully measure or compare programs. For example, the field needs more transparency about whether programs are more advanced or entry-level; target populations (e.g., youth versus adult); whether programs are registered or non-

registered; and how they relate to existing education systems such as higher education, K-12, and career and technical education.

Equally important are voluntary yet widely adopted standards for occupational pathways that provide a common framework for learning and quality assurance across programs and employers. Such standards would address, for example, the issue of treating a six-month-long cybersecurity apprenticeship the same as a four-year-long one. Having these standards will improve consistency and enable more systematic evaluation and comparison of outcomes while still allowing for the flexibility that different industries and contexts require.

It will not be possible to build a strong evidence base around the employer business case for apprenticeships without national definitions for apprenticeships and standards for learning in apprenticeship pathways to improve consistency and transparency about what the different options and types of work-based learning are. Without these critical elements, the meaning of apprenticeships and what people learn from them will continue to be elusive—for employers, for prospective apprentices, and for researchers trying to understand what works.

The challenge is balancing flexibility for innovation with enough standardization to ensure shared quality standards. Overly rigid standards stifle adaptation to industry changes, while overly loose standards prevent meaningful quality assurance. Most importantly, employers must trust the assessment systems. If they don't understand or find relevance in the apprenticeship system, they won't participate. As one Swiss expert noted, apprentices may be cheap labor when they sweep floors, but after years of sweeping, what real value does the employer gain? Value comes from teaching the practical skills employers actually need.

Build data infrastructure and data collection tools

Even when employers track data for costs and benefits, they don't collect it in the same way and there are no established norms around it that make it a general practice. There is no common data dictionary, and limited infrastructure exists to link data across systems, such as being able to link earnings information from wage records without necessitating data-sharing memorandums of understanding. To build a more robust evidence base, the field could benefit from:

- **A shared data dictionary** specifically for ROI measurement, which would enable data to be analyzed more easily and consistently across programs. For example, data on program duration, share of work-based learning, source of curriculum, source of qualification/license, relationship with intermediaries, etc.
- **Low-burden data collection** tools that employers can easily integrate into existing systems, which might reduce the friction of having them participate in research efforts.

In the long run, the field could benefit from a comprehensive platform connecting employers, apprentices (and their parents), education and training providers, and

intermediaries. A shared platform would facilitate better information-sharing within and across stakeholder communities.

Finally, if employers are involved in shaping the design and updating of work-based learning occupational pathways, they will need some tools for tracking and assessing progress and demonstrating mastery. Such tools could also give apprentices more transparency about what they were expected to learn and feedback on their progress on mastering the necessary skills.

Without this systematic data infrastructure and foundational research, we remain limited to ad-hoc studies that cannot be meaningfully compared or aggregated to build cumulative knowledge.

Build employer capacity to pilot, track data, and continuously improve

Most employers lack basic knowledge about apprenticeships and would not know how to design effective programs even when they're interested. Most employers also do not have the capacity to track the data they would need to assess their ROI. To address gaps such as these, the state or intermediaries that work with employers can provide hands-on technical assistance to help them design a program to optimize ROI. Rapid-cycle learning opportunities would allow employers to pilot different program designs and optimize their ROI through experimentation and iteration. Even with strong evidence showing that apprenticeships can work, employers need this kind of practical support to act on that evidence and scale what's effective.

Peer learning networks offer another powerful support mechanism, creating spaces where employers can share experiences and lessons learned with others facing similar challenges. Outreach efforts must connect with employers through channels they already trust, rather than relying solely on government or unfamiliar organizations to make the case. A comprehensive platform mapping out apprenticeship workflows that other employers have used, data collection processes, and templates and resources would further increase opportunities for learning and scaling what works.

Offering both forms of support—state/intermediary technical assistance and insights from peers—may be more effective than one alone. In addition, having the opportunity to connect and learn with similar groups in other regions or states through communities of practice can also help employers identify innovative practices and solutions to their challenges.

Research priorities for the field

The U.S. is still in the early stages of building an evidence base about the value for employers of investing in apprenticeships. Key research priorities include:

- **What program design features optimize ROI for different occupations?** The Swiss evidence suggests that design matters significantly, but we don't yet know how these insights translate to the U.S. context across various industries.

- **What types of firms benefit most from apprenticeships?** Research should map the distribution of firms across categories: production-oriented, investment-oriented, and those experiencing double benefits. Understanding the common characteristics of each category would help target outreach and tailor value propositions more effectively.
- **How do apprenticeships compare to other talent strategies?** Employers need comparative analyses showing whether apprenticeships achieve similar or better results than alternatives such as recruiting experienced workers, hiring college graduates and providing on-the-job training, or relying on contractors.
- **How do hiring costs and sector-specific factors affect ROI?** High hiring costs can make apprenticeships financially viable even with significant training investments, but we lack U.S.-specific estimates. Health care, IT, advanced manufacturing, and life sciences deserve deeper investigation to understand what drives variation.
- **What policies and infrastructure can reduce unnecessary employer costs?** Research should identify enabling supports such as intermediaries handling administration, funding for related instruction, data infrastructure, information platforms, tax credits, streamlined compliance, and qualifications frameworks.
- **How does ROI develop over time as a new program is implemented?** There is limited evidence on startup costs for employers implementing apprenticeships for the first time and timelines from initial planning to sustained adoption.
- **How can we optimize value for both employers and apprentices?** Sustainable programs must work well for both parties, requiring research on how to balance competing needs and maximize mutual benefit.

Methodological priorities

Several researchers noted that the more data that can be gathered from third-party sources (such as wage records and administrative data that are easily linked), the less they need to rely on primary research through surveys and interviews—which also lowers the burden on employers to participate in the research. The field should develop and pilot standardized cost-benefit surveys that can be deployed more widely while being intentional about minimizing the burden on employers. For example, if program data were linked to state wage records not only during the program but also after completion, researchers could then leverage the earnings data to analyze outcomes over time. Occupation-specific studies of the business case—going beyond traditional ROI to capture the fuller value proposition—should strive to reduce variation and increase sample sizes to generate more reliable estimates. Having occupation-level data that are consistent and interoperable across data sources would help enable those studies.

Simulation tools for program planning and design would help employers model different scenarios and understand expected outcomes before making large investments. Finally, improved productivity measurement tools would help capture the apprentice contribution more accurately, addressing one of the most challenging measurement problems in ROI studies.

The field also needs broader, systematic research into the effects of adopting apprenticeships on employers (innovation, retention, etc.), understanding what to measure, what policy reforms can have the greatest impact on firm participation (while not sacrificing appeal for apprentices), and how apprenticeship adoption and the business case for it plays out differently for different types of employers (e.g., size, industry, work organization).

Building better evidence gradually

The field should build toward better evidence gradually rather than waiting for perfect data. This can include piloting survey tools and data collection approaches with willing employers in receptive occupations, learning and improving over time. This iterative approach allows the field to make progress while simultaneously strengthening the research infrastructure. Perfect data will never arrive if we wait for it passively; instead, we must actively build toward it through cycles of implementation, evaluation, and refinement. In the absence of more evidence on what works, those trying to pilot new approaches will also need to be patient and comfortable with initial failure, redesigning the approach if the first results are poor.

Recommendations and conclusions

Organizations working with employers should begin by listening to employers' pain points rather than leading with apprenticeships as a solution. This approach builds trust and ensures that proposed programs address real needs. Once the challenges are clear, intermediaries and policymakers should:

- Identify which employers in a given industry or occupation are most likely to benefit from apprenticeships based on their specific circumstances.
- Target these employers with messaging that explicitly connects apprenticeships to their pain points and shows how they solve problems specific to their industry at this particular time.
- Focus on strategies that encourage employers to share their experiences with other employers, recognizing that peer recommendations are the most trusted source of information.
- Formalizing learning in apprenticeships as part of the education system to create more transparency and shared meaning about what an apprenticeship qualification means and its value to employers, and to give apprentices more straightforward advancement opportunities.
- Look for ways the ecosystem can reduce costs for employers, especially startup costs such as administrative barriers, technical support and training needs, and foundational instruction.
- Where possible, state funding should cover general education components, and employers can consider pooling resources for foundational instruction related to an occupation—such as Occupational Safety and Health Administration trainings and licensing costs—rather than each employer bearing these costs individually.

This reduces duplication and makes participation more attractive for smaller employers.

Recommendations for employers

Employers should take concrete steps to better understand and optimize their talent investments, including:

- Build infrastructure to track the most important costs and benefits associated with key talent strategies—not just for apprenticeships, but across all hiring and development approaches. This tracking capability enables more informed decisionmaking and helps identify which strategies deliver the best value.
- Consider the Swiss approach of using periodic surveys to systematically collect data on talent investment outcomes.
- For competency-based apprenticeships, use the program structure itself as a measurement tool for productivity gains by clearly defining competencies and assessing apprentices' progress against them.

Recommendations for funders

Funders should resist the temptation to invest heavily in standalone ROI studies that produce headline numbers. At this stage of development, such studies risk creating misleading benchmarks that obscure rather than illuminate the business case for apprenticeships. Given the enormous variation across contexts, occupations, and program designs, aggregate ROI figures are unlikely to be generalizable or predictive for individual employers at this point in time. Instead, funders can focus on more strategic investments that help address the root causes of weak evidence, such as:

- Invest in foundational infrastructure, capacity, and research that best allow for systematic measurement, rapid-cycle learning, and employer targeting.
- Support advocacy for clearer definitions and voluntary standards for apprenticeship pathways, and fund the development of shared data dictionaries and low-burden data collection tools that can be piloted, refined, and shared across regions.
- Support intermediaries to build employer capacity for continuous improvement, including adequate capacity to help employers iterate on program designs and track outcomes.
- Rather than funding one-off studies, support intermediaries with the capacity to take time and listen to employer talent needs and provide hands-on technical assistance to employers—including support for tracking their own data, iterating on program designs through rapid-cycle learning, and optimizing ROI through experimentation.
- Fund peer learning and knowledge-sharing infrastructure. Support communities of practice where employers within specific occupations or across regions can share

experiences and lessons learned. Peer recommendations are often the most trusted and actionable form of convincing evidence for employers.

- Encourage longer time horizons for talent investment. Support research and demonstration projects that help employers move beyond short-term cost-benefit thinking and toward strategic talent investment, including comparative analyses showing how apprenticeships perform relative to other talent strategies over time.

Recommendations for policymakers

Policymakers should prioritize strategic investments that strengthen the apprenticeship ecosystem, such as:

- Fund the missing functions: multi-employer organizations that can coordinate across firms, research and data collection infrastructure that can build systematic knowledge, and related instruction that employers struggle to provide on their own.
- Establish clearer definitions and standards and improve alignment across education and training systems.
- Develop qualifications frameworks that make learning pathways visible and portable for both employers and workers.
- Invest in technical assistance and rapid learning capabilities to help the field iterate and improve faster—translating research insights into practical improvements in program design and implementation.

Three key takeaways

We are still in the early stages of the journey toward modernizing and scaling high-quality apprenticeships. In many ways, the proliferation of new programs, funding streams, and approaches has advanced much more quickly than the foundations for research and evidence on what works—including what works for employers. We can build on the substantial evidence from countries with more mature research portfolios, using their insights to generate theories, develop comparative research, and learn from their data collection strategies and methods. Key takeaways from this evidence base are:

- **A positive ROI for business is possible, but not universal**. Average/median ROI figures won't get you very far—firm characteristics, labor markets, program design, location, and other factors are all influential. Because there are multiple paths to a business case, it may be hard to generalize, but that doesn't necessarily mean that there's no value. In fact, international evidence suggests that apprenticeships remain an underutilized talent strategy in the U.S., and are too often disconnected from formal systems of education, higher education, and professional licensing that could bring them the status, rigor, and recognition they need in new industries.
- **The biggest benefits are often hardest to measure.**[58] [59] [60] Study after study show that just counting the direct costs and benefits in a traditional ROI formula leads to apprenticeships barely breaking even. But when you include reduced turnover, fit of apprentice, lower hiring costs, and learning culture, most employers come out ahead.

- **We need better evidence, but we can't wait for perfect data.**[61] Building a stronger evidence base with more robust data is a long-term priority, but in the meantime, the path forward is about:
    - Identifying which companies can benefit most
    - Identifying which design features help improve employer ROI
    - Understanding how to ensure employers are not taking on unnecessary costs
    - Providing insights to educate employers about how to optimize the value they get from participating in apprenticeships

In short, instead of asking "what's the ROI?", ask, "Under what conditions can firms get a positive ROI?" and "What types of firms have the most to gain from apprenticeships?" Focus on breaking even by program completion to protect against poaching. Additional benefits accrue over time—measurable or not. Tailor apprenticeships' value proposition to the pain points of specific firms—apprenticeships are not right for every firm, but they are starkly underutilized in the U.S. as a talent strategy.[62] [63] We can start answering these questions now, even as we work toward better evidence on what works for the future.

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