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USING REAL-TIME LABOR MARKET INFORMATION TO ACHIEVE BETTER LABOR MARKET OUTCOMES

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Introduction

Understanding complex labor markets including the demand for skills is key to guiding our investments in education and training. This is especially true for community colleges responsible for preparing a significant portion of the nation's workers. These institutions are being increasingly challenged to better align their programs of study with entire economies undergoing restructuring and with most workplaces escalating their skill requirements. Policy questions surrounding higher education funding formulas, measures of performance and institutional rating systems are all seeking more focus on labor market outcomes.

Employers and public policymakers are calling for better alignment of education and training investments with the needs of the economy. Students and the parents who often finance their education are looking for job placement at good wages once they graduate. Towering levels of student debt coupled with limited employment prospects for many students have also triggered legislative and regulatory proposals demanding more accountability coupled with sanctions imposed on substandard institutions. Shrinking state resources and demands for greater accountability

confront most community college systems. Proposals for outcomes-based funding¹ and proposals for the adoption of outcomes measures focused on employment and earnings will intensify in the years ahead. More than ever, community colleges will need to ensure that programs of study align with labor market demands and produce graduates with the skills and qualifications that employers need.

Effective use of labor market information and research is one of the means that community colleges have to achieve better employment outcomes for their graduates. Yet too often, the labor market information available is not timely and lacking in specifics to guide program development. The growing digitization of labor markets—including Internet job postings and resumes, social media sites, and social networks—also serves up a constant source of data in real time. These new sources of labor market information and innovative analytics provide a more penetrating look into how the labor market works and the skills employers seek when filling positions. As a result, we are able to

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¹Outcomes-based funding models are an evolved form of “performance funding,” which refers to a broad set of policies linking allocation of resources to accomplishment of certain desired objectives. Historically, postsecondary performance funding models were often add-ons or bonuses to base institutional allocations that institutions earned for meeting various goals or benchmarks. Additionally, many of these earlier models included measures focused more on inputs or processes than student progression and outcomes and were not intended to drive increased student completion. Today's outcomes-based funding models similarly seek to create incentives for and reward progress toward a set of stated goals, and have a direct link to the state's higher education attainment needs and place primary emphasis on student completion, though they often include measures beyond student progression and completion. Advanced outcomes-based funding models also determine how a significant portion of the state's general budget allocation to institutions is determined.

capture more timely details of occupational demand including skills and certifications sought, and on the flip side, the characteristics and qualifications of available labor supply. From this data, and the accompanying analytics, community colleges can shape strategies, guide resource allocation, and enrich the evaluation of programs. By strengthening these functions, community colleges will be able to more tightly align curricula with the requirements of dynamic economies. In doing so, they will become more responsive to the needs of students and employers and thus achieve better outcomes.

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Labor Market Outcomes as Policy Drivers

There is a widely shared belief that investments in education and skill development generate substantial returns and determine economic success. A study by economists at the Federal Reserve examined the factors contributing to greater state prosperity over a 65-year period and found that a state's high school and college attainment rates were important factors in explaining its per capita income growth relative to other states between 1939 and 2004 (Bauer, Schweitzer, and Shane, 2006).

There are compelling reasons to invest in education and training and general agreement on what should be done. There are, however, growing concerns about the results we're getting from our efforts, especially as we once again experience employment and economic growth.

A 2011 McKinsey Center for Government study found that half of young graduates are "not sure that their postsecondary education has improved their chances of finding a job" (Manyika et. al, 2011). Furthermore, colleges and universities appear to overrate the preparedness of their graduates. According to the McKinsey survey, 72% of educational institutions felt that their graduates were ready for the job market, but only 42% of employers agreed. Better meeting the challenges of aligning institutional performance with employer needs requires competent labor market research and an understanding of the skills employers are looking for.

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Outcomes-based funding strategies are being implemented or considered by several states to achieve better outcomes from their education and training investments, including community colleges. With the outcomes-based funding approach, productivity improvement for postsecondary institutions means shifting funding based

solely on enrollment to a formula that includes student outcomes such as course or degree completion. While completion measures represent a significant advance in how we assess productivity improvement, they are inadequate for gauging more fundamental economic impacts of education and training investments, including how they contribute to labor market outcomes. For that, measures such as employment and earnings results must be considered under outcomes-based funding strategies.

Recent advances in state data systems development under the federally financed State Longitudinal Data Systems effort and Workforce Data Quality Initiative have yielded significant progress in linking student data with state wage records to capture reliable measures of employment and earnings by institution and program study. Seven states (Arkansas, Colorado, Florida, Minnesota, Tennessee, Texas and Virginia) have published employment and earnings outcomes for students who graduate from certificate and degree programs at two- and four-year colleges (Workforce Data Quality Campaign, 2014). These states offer search websites so that policymakers and the public can view earning and employment outcomes by school and by program.

All of these states either already have outcomes-based funding or are considering adopting it. Some educators have raised legitimate concerns about the coverage of the data, however, since students employed in states other than the state where they were educated are not included in the analysis. Texas State Technical College System, a network of public two-year institutions that provide technical training, has embraced outcomes-based funding. The system worked with the Texas Higher Education Coordinating Board and others to develop a model approved in 2013 that bases the system's primary state funding amount on the job placements and earnings of graduates—or,

more specifically, the estimated economic benefit to the state via increased tax revenue produced by former students now in the workforce (Selingo, in publication). As reliable employment and earnings data become more readily available and we are able to overcome certain limitations, these measures will likely receive more attention under outcomes-based funding strategies. If and when they do, institutions must be prepared to more consistently assess labor market performance.

The spiral of escalating costs of postsecondary education, combined with a growing student debt burden now estimated to exceed more than \$1 trillion, is another policy driver that requires more focus on labor market outcomes. In an effort to protect students from burdensome debt, the U.S. Department of Education has announced regulations, primarily aimed at career colleges, to hold these institutions more accountable for outcomes (U.S. Department of Education, 2014). These regulations will go in effect on July 1, 2015. The thrust of these regulations, known as the gainful employment rules, provides for sanctions in qualifying for receipt of federal student aid if certain outcomes are not achieved. To qualify for federal student aid, the law requires that most for-profit programs and certificate programs at private nonprofit and public institutions prepare students for

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“gainful employment” in recognized occupations. The regulations require that: “a program would be considered to lead to gainful employment if the estimated annual loan payment of a typical graduate does not exceed 20% of his or her discretionary income or 8% of his or her total earnings.”

Programs that exceed these levels would be at risk of losing their ability to participate in taxpayer-funded student aid programs. While primarily focused on increased oversight for private career colleges, these regulations also convey a deeper message about accountability and transparency for all postsecondary institutions.

Most states are in the midst of grappling with the challenges of better aligning their postsecondary system with economic development goals and strategies. They are attending to the design and development of accountability systems that place more emphasis on labor market outcomes. A report from the International Labour Office shared cornerstones of a policy framework for developing a suitably skilled workforce to include:

- 1) Broad availability of a good-quality education as the foundation for future training.
- 2) A close matching of skills supply to the needs of labor markets and enterprises.
- 3) Enabling workers and enterprises to adjust to changes in technology and markets.
- 4) Anticipating the skills needs of the future.

A recurring theme across the policy drivers reshaping our postsecondary education systems is the need to not only better understand broad labor market trends, but also to better capture the nuances of skills and job-performance requirements. Because of the constancy of economic restructuring and technological innovation, America’s workplaces and job-performance requirements are steadily being redefined. If our institutions and their curriculum content are not able to keep pace with these dynamics, their labor market outcomes will suffer.

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Limitations of Traditional Labor Market Information

To become more responsive to labor market needs, postsecondary institutions must first become more proficient in researching and analyzing labor markets, which many community colleges and workforce development programs have started to do. For example, the Aspen Prize, one of the most prestigious awards that community colleges compete for, requires that participating institutions report labor market outcomes, including employment status and post-graduate earnings results. In 2013, seven of the 10 community college finalists for the Aspen Prize reported making use of public and

private sources of labor market information to guide strategies and program development (EMSI, 2014). Community colleges have also begun to make greater efforts at incorporating labor market analysis and occupational projections in planning and program development. However, making more—and better—use of labor market and workforce analysis requires a familiarity with the landscape and limitations of the conventional sources of labor market data and the extensive body of research built from it. Too often, the users of traditional sources of labor market information have found it inadequate and not current enough to serve their purposes.

Traditional sources of labor market data from state and federal agencies—such as the Bureau of Labor Statistics, the Census Bureau and the National Center for Education Statistics—include broad measures of key information: employment and unemployment, employment and wages by industry and occupation, indicators of labor supply and demand, enrollments and completions by fields of study, and changes in workforce characteristics over time. Most of the data that institutions work with comes from the following five major sources: census data, employment statistics, industry and occupational taxonomies, administrative records, and occupational employment and projections (U.S. Department of Labor, 2010).

As analysts begin to use these labor market data sources as a guide for job seekers, students and the institutions that serve them, the limitations become clearer. Most of these data sources were never intended to meet the needs for program development or curriculum improvement, or to assist students in making more informed choices about which program of study to pursue. Their initial development as a support for macroeconomic analysis and policymaking does not lend itself to a micro-analysis of local labor market performance and evolution.

Institutional researchers and program developers responsible for providing the underlying analysis to create new programs

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Institutional researchers and program developers responsible for providing the underlying analysis to create new programs of study and curricula reform often are unable to access the most current evidence to justify their proposals. As a result of these shortcomings in the data, bold reforms and increased responsiveness to market forces—both critical to the future of community colleges—are often limited in scope and may take longer to implement.

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The Internet and Real-Time Labor Market Information: More Timely and Detailed Data

Among the early adopters of Internet data technologies were employers and job seekers: employers seeking new hires began to post openings to Internet job banks, while workers looking for jobs posted resumes to advertise themselves. This digitization of the job search process spread rapidly over the past two decades as commercial and public job boards gained prominence. In essence, how employers and employees engage in the job search and match process has been transformed. And, when harnessed effectively, the large volumes of new digital data can improve our understanding of labor market evolution and dynamics. More

timely and in-depth portrayals of occupational demand, skill requirements and industry hiring patterns can assist students to achieve better job-placement outcomes. Furthermore, more refined data can be applied to make program and curriculum development responsive to labor market needs.

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Monster and Career Builder are the two of the most well-known job boards, with millions of job postings and resumes on file. Most states offer free job boards to employers and job seekers as a public service of their workforce agencies. Other sites such as Craigslist provide low-cost means to enter jobs at the lower end of the skill and wage spectrum. Dice Holdings is a leading provider of specialized websites for professional communities, including technology and engineering, financial services, energy, health care and security clearance. Additionally, most firms use their company websites to post jobs and recruit employees. Increasingly, however, social media sites such as Facebook, LinkedIn and other digital information exchanges are gaining favor in job-search and recruitment efforts. Vast volumes of digital labor market information are widely distributed across thousands of sites.

These digital data resources are typically collected on a daily basis and aggregated for purposes of analyzing current labor market performance and employer needs. The Conference Board, a business research organization with a Help Wanted OnLine program, uses data collected from over 16,000 online job board sources, including corporate job boards. Burning Glass Technologies, one of the early entrants in the emerging field of real-time labor market information, uses its job aggregation and artificial intelligence technology to search for job listings from over 35,000 sources, including employer websites, job boards, newspapers, and government agencies. From this aggregation process,

Burning Glass compiles a database of over 7 million current job listings, updated daily, taking care to de-duplicate the gathered job postings.

These aggregators developed tools and new data retrieval technologies that not only make job searches more convenient, but also provide a source for more timely labor market information and new analytics. Regular tallies of which industries are hiring, occupations that employers are looking to fill, and the skill sets being sought provide effective and timely signals of labor market demand that can be used for workforce development guidance.

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At a 2009 Brookings Institution convening on labor market information, participants discussed the significance, opportunities, and challenges associated with this newly emerging data source. In the course of their conversations, labor market information experts agreed to the following definition of real-time labor market information (LMI), which I adopt for the purposes of this paper:

Real-time LMI is labor market intelligence derived from the analysis of job postings and resumes placed into public and private labor exchanges. It is “real time” because it can be pulled from the Internet daily. It is labor market intelligence because it can include supply and demand trends, emerging occupations, current and emerging skill requirements, and market demand for education and certifications (Vollman, 2011).

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The new systems and sources of real-time labor market information are not without limitations. Real-time data are coming from private providers with proprietary interests, but with minimal regulation and uneven monitoring. These providers protect their sources and methods of data gathering and manipulation, which results in a lack of transparency. This is in stark contrast to public providers of labor market information who must explain data-gathering and estimating methods. However, as the use of real-time labor market information grows, users will likely seek greater transparency.

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As with any new data source, legitimate questions are raised about accuracy, representativeness and coverage. A recent analysis from the Upjohn Institute found that job-openings

data from the Job Openings and Labor Turnover Survey, a monthly, statistically valid survey of job-opening and hiring activity conducted by the Bureau of Labor Statistics, and job-postings data from Help Wanted OnLine generally move in the same direction over time (Watts, 2011). More independent examinations such as this one are needed from researchers and market analysts to ensure the soundness of real-time data for planning and decision-making.

Aggregating digital information generated by Internet users as by-products of market transactions can often be superior to traditional methods of data collection, which are more expensive and less timely. This is particularly true of market research, consumer behavior, and other economic exchanges where timeliness of the data is critical to capturing current market trends and conditions.

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Additionally, technological advances in reading and analyzing this data have added a new dimension to labor market analysis. For example, most of the Internet-generated data—such as job postings and resumes—are in text formats as opposed to numerical codes. In order to make this data into meaningful labor market intelligence, words and phrases must be carefully analyzed to discern important factors such as skill requirements and performance traits associated with job postings.

Real-time labor market information and new analytical tools are contributing to enhancing the quality of labor market analysis. We are able to see in greater detail the qualifications, skills, and certifications that employers want and job-seekers offer. Once mostly based on quantitative information, labor market analysis now includes rich, qualitative details that can inform how community colleges respond to trends in their local labor markets.

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Applying Real-Time Labor Market Analytics: Lessons from Early Adopters

The availability of real-time data describing current supply and demand conditions in the labor market makes possible enhanced labor market analysis. This becomes particularly useful as technological innovation in the workplace redefines occupations, skills requirements, certifications and job-performance requirements. These new requirements are often missed by traditional sources of labor market information and taxonomies. New developments in the labor market will require swift and more focused actions from community colleges if they are to effectively respond to market demand.

Jobs for the Future, with funding from Lumina Foundation and the Joyce Foundation, has been leading a major national effort to introduce tools and data systems for real-time labor market information to a select group of community colleges. The aim was not simply to transfer this technology, but to explore ways that it could be applied to advance the community college mission of aligning services and outcomes with regional economies.

Among the significant accomplishments of the project were several illustrations of how real-time labor market information assisted community colleges with difficult challenges. These examples offer community colleges important guidance as they consider applying new technology and data analysis to the labor markets in which they operate. Examples of how community colleges utilize real-time labor market information include: capturing data on emerging occupations, analyzing the market and incorporating performance-based funding, responding to employer needs, aligning curricular content with regional economies, and tracking occupational supply and demand.

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Capturing data on emerging occupations: LaGuardia Community College

LaGuardia Community College in New York is an urban institution with over 18,000 ethnically diverse students. When “green” job advocates pushed for the development of programs that train workers for employment in “green” occupations and industries, LaGuardia Community College made use of real-time labor market information. College analysts quickly identified emerging occupations, skills, and certifications in their region.

Traditional labor market data lacked relevance since new job titles, skills sets, and certifications associated with “green” jobs were not yet found in these data sources. By using real-time labor market information data tools, LaGuardia staff incorporated previously unavailable information about emerging occupations, skills requirement, and certification needs to qualify for employment in new industries. The outcome: program offerings and curriculum design that were more targeted and responsive, along with a more prudent use of limited resources.

Labor market analysis and performance-based funding: Texas State Technical College

Texas State Technical College, the state-supported technical college system in Texas, serves nearly 30,000 students in traditional degree programs, short-term continuing education, and corporate training programs. Its role and mission is to help Texas meet the high-tech challenges of the global

economy, in partnership with business and industry, government agencies, and other educational institutions. In response to a shift in funding model—from one dependent upon enrollment and contact hours to the new outcomes-based model, which relies on student placement/transfer and graduates' earnings—the system is now examining how real-time labor market information can be used for program and curriculum development. Texas State Technical College has implemented multiple real-time tools, including Wanted Analytics, CareerBuilder and Burning Glass Labor Insight. In addition, the system is working closely with other providers such as the Texas Workforce Commission to develop new tools to link job-seekers with complementary job openings based on competencies.

By harnessing real-time labor market information, Texas State Technical College can improve a number of important metrics, most of which fall into two categories: fostering curricular alignment and strengthening job placement. Fostering curricular alignment requires that the system identify skills that are in high demand and make comparisons of skills between resumes, job postings and curricula. Strengthening placement requires accurately forecasting emerging employer demand, providing insights into which employers are actively hiring and whether this demand is location-based, and identifying and recruiting employer partners for advisory committees. Texas State Technical College's improvements using real-time labor market information provides an excellent illustration of how institutions should approach the integration of real-time technologies into ongoing work.

Responding to pressures from employers using labor market analysis: Cerritos College

Cerritos College, a public community college serving southeastern Los Angeles County, offers degrees and certificates in 87 areas of study in nine divisions. When regional employers called on the Executive Dean for Workforce Development to train more graduates with advanced manufacturing skills, he first turned to traditional sources of labor market information—but these sources indicated long-term trends of declining employment in manufacturing.

Using multiple real-time labor market information tools and data sources, Cerritos analysts conducted additional research to determine if there was demand for advanced workers; and, if so, what skills and certifications were required. The use of real-time labor market data revealed that there was, in fact, growing demand in niche areas of manufacturing that were hidden within traditional industry codes. The real-time data provided stronger and more detailed evidence to move ahead in developing new programs in advanced manufacturing occupations.

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Aligning curriculum with regional economies: Kentucky Community and Technical College System

Kentucky has opted to pursue job creation in targeted sectors and industry clusters with particular emphasis on linking economic and workforce development strategies and investments. As part of this statewide initiative, Kentucky Community and Technical College System, a state-

wide multi-campus system enrolling more than 100,000 students in 600 credit programs, engages in self-assessment of its programs and courses. As the largest provider of postsecondary education and workforce training in the state, the community and technical college system has an incentive to ensure that its students graduate with the skills and qualifications employers need.

In August of 2012, the Chancellor of the Kentucky Community and Technical College System launched a pilot of Jobs for the Future's Dynamic Skills Audit, together with the chief academic officer, dean of workforce programs, institutional research, and curriculum development specialists from every campus. The Dynamic Skills Audit is a data-driven analysis of curriculum content and programs of study in relation to labor market requirements and demand. The Chancellor called on every college in the system to:

- 1) determine the key growth occupations that make up employment in the targeted economic sectors;
- 2) extract the knowledge and skills required for these jobs using Internet job-postings data;
- 3) conduct the same analysis at the program level; and
- 4) use the results to improve course content and learning objectives within those programs of study linked with targeted occupations.

The Dynamic Skills Audit, which frequently yielded new insights about the changing nature of occupational labor markets, was introduced not as a substitute for established efforts at curriculum refinement and industry advising, but as a complement to it. The audit relied on both real-time and traditional sources of labor market data, including details about skills and certifications. Technical support is provided to all campuses from the Chancellor's office, external consultants, and data systems providers.

The Dynamic Skills Audit is a cost-effective approach with a replicable structure that is enhanced by streaming labor market data. It is a sustainable, inclusive process that involves faculty, employers, and administrators in the quest to align programs of study with dynamic regional economies. This process will be ongoing as part of a larger transformation of how Kentucky community colleges respond to economic change, and is a strong example for other colleges and universities seeking to respond to changes in the labor market with dynamic and more-detailed information.

Institutional collaboration for tracking occupational supply and demand: Bay Area Workforce Funding Collaborative

The Bay Area Workforce Funding Collaborative, which focuses on health care and life sciences, covers ten counties in the San Francisco Bay Area, a region of more than six million residents. The San Francisco Bay Area has multiple community colleges, universities, and workforce development programs engaged in training workers for the health care and life sciences industry. The region also has thousands of employers with a wide range of employment opportunities and needs. The Collaborative served as the catalyst to bring together the region's education and training providers with employers to examine how well existing training programs were responding to employer demands in this critical sector.

On the supply side, analysts gathered data on program-specific characteristics, such as enrollments, completions, certifications, licensure and job-placement results. On the demand side, analysts gathered

data on occupational employment levels, occupational wages, long-term occupational projections, current occupational demand from Internet job postings, and skills requirements and certifications data by occupation (also from Internet job postings).

Using this data, the Collaborative then identified program duplication, an excess of graduates in relation to employer hiring patterns in some instances, and the emergence of new certification requirements not captured by training programs.

Summary and Conclusion

State and federal policymakers along with students and employers are calling for more accountability and better outcomes from our investments in education and training. Employers particularly are seeking stronger alignment between what schools teach and what they need from workers who are expected to function in more-challenging work settings. Some states are moving towards outcomes-based funding strategies for both two- and four-year public colleges in order to reward results over enrollments. Increasingly, measures of labor market outcomes such as post-graduation employment and earnings status are being publicly reported by institution type and programs of study. The convergence of outcomes-based funding with the growing availability of labor-market-outcome measures suggests that measures of post-graduate employment and earnings will enter into institutional funding decisions.

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New real-time data, tools and technologies can contribute to improved decision-making, program development and outcomes for community colleges confronting outcomes-based funding challenges. While they will not replace the power and influence of faculty, administration, boards, and employers in guiding the future of community colleges, they are a data-based and analytical complement to these efforts. The nature of real-time data also ensures that community colleges will capture more current labor market developments and a deeper appreciation of employer skill requirements. By effectively applying these new data sources, community colleges will achieve better labor market outcomes.

Recent work with a consortium of community colleges has yielded some important lessons that may be of value to America's community colleges. These colleges demonstrated how new data and analytical tools can be applied to guide alignment with regional economies, assist in examining the responsiveness of their programs of study and help with curriculum review to ensure they are teaching the right skills. When these new real-time analytics are combined with traditional labor market

analysis and more consistent tracking of post-graduation labor market outcomes such as employment and earning status, community colleges will strengthen their capabilities for market-driven programming and be better-positioned to confront growing demands for accountability and outcomes-based funding.

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Author Bio

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John Dorrer recently retired after 30 years of experience in workforce development. An economist and research administrator, his work has focused on workforce development, human capital, and labor market policies at the national, state and local levels. Prior to his retirement, Mr. Dorrer worked as a senior consultant at Georgetown University, Center on Education and the Workforce. He previously served as program director, Jobs for the Future's (JFF) Building Economic Opportunity Group, focused on advancing the education and careers of low-skilled adults and low-wage workers. He led JFF's Credentials That Work initiative, helping states use real-time labor market information and other longitudinal data to align their education and training investments with the needs of dynamic regional economies. Mr. Dorrer holds a Master's in resource economics and a Bachelor's in economics, both from the University of New Hampshire.

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