Literature Review: Career Pathways Programs

OPRE Report #2013-24

June 24, 2013

Implementation, Systems and Outcome Evaluation of the Health Profession Opportunity Grants to Serve TANF Recipients and Other Low-income Individuals

HPOG

Health Profession Opportunity Grants

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Overview

The Health Profession Opportunity Grants (HPOG) Program was established by the Affordable Care Act of 2010 (ACA) to provide training programs in high-demand healthcare professions to Temporary Assistance for Needy Families (TANF) recipients and other low-income individuals. The Administration for Children and Families (ACF) of the U.S. Department of Health and Human Services (HHS) awarded grants to 32 organizations to develop career pathways programs in healthcare. ACF is utilizing a multi-pronged evaluation portfolio to assess the HPOG demonstration projects. This monograph—undertaken under one component of ACF's evaluation portfolio, the HPOG Implementation, Systems and Outcome Project—summarizes the research literature on career pathways (CP) program design and implementation, outcomes and impacts.

Career pathways (CP) programs have developed over the past decade as a comprehensive framework of adult developmental and vocational education and supportive services designed to address the challenge of providing post-secondary skills training to low-income and educationally disadvantaged populations. Although there is variation in the CP framework at the program level, CP programs share most of the following elements:

- CP programs provide training that is designed to overcome educational deficits and expedite employer-recognized credentialing and placement in a specific industrial sector.
- CP programs combine training with the provision of support services designed to help students complete skill straining. Such services may include counseling, tutoring and providing personal, social and financial supports.
- CP programs engage employers in a variety of ways, including having employers: help with program design and implementation; provide work-site training; facilitate placement and advancement.
- CP programs collaborate with other key stakeholders and training and service providers, potentially resulting in systemic changes in training opportunities for low-income populations.
- CP training is designed to fit the schedule and life circumstances of participants, such as accessible training programs for low-income adults who may be employed and/or have families.

To date, there are no completed rigorous, experimental impact studies of a comprehensive CP programs, although several are in process. The research literature does include a number of relevant outcome studies, as well as impact studies of similar skills training programs. The outcome studies demonstrate that CP programs can be successfully implemented for low-income populations and can produce positive outcomes for meaningful proportions of students. The few relevant impact studies demonstrated that similar programs can lead to significant positive impacts on employment and earnings. Additionally, the CP research literature provides important guidance to current efforts to evaluate the HPOG program.

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The Health Profession Opportunity Grants (HPOG) Program was established by the Affordable Care Act of 2010 (ACA) to provide training programs in high-demand healthcare professions to Temporary Assistance for Needy Families (TANF) recipients and other low-income individuals. Beginning in 2010, the Administration for Children and Families (ACF) of the U.S. Department of Health and Human Services (HHS) provided five-year grants to 32 grantees in 23 states across the United States. HPOG grantees include post-secondary educational institutions, workforce investment boards (WIBs), state or local government agencies, and non-profit organizations (NPOs). Five grantees are Tribal organizations.

ACF is utilizing a multi-pronged evaluation strategy to assess the HPOG demonstration projects. This strategy includes the following components: (1) the HPOG Implementation, Systems and Outcome Project; (2) Evaluation of Tribal HPOG; (3) HPOG Impact Study; (4) additional impact studies of a subset of HPOG grantees through the Innovative Strategies for Increasing Self-Sufficiency (ISIS) project; (5) HPOG National Implementation Evaluation; and (6) University Partnership Research Grants for HPOG. These research and evaluation activities aim to provide information on program implementation, systems change, outcomes and impact.

Background and Overview

In recent years workforce development and welfare reform policy and programs, as well as the nation's technical and community colleges, have been faced increasingly with the challenge of preparing low-income individuals with limited vocational skills and work experience for better-paying jobs requiring post-secondary training. Career pathways (CP) programs have developed over the past decade as a comprehensive framework of adult developmental and vocational education and supportive services designed to address this challenge. They represent a potential structural change in the system of vocational training for their target populations. Most of the Health Profession Opportunity Grants (HPOG) programs have implemented workforce development programs that include many, if not all, of the essential components of the CP framework.

This report reviews selected research studies on CP program design, implementation, outcomes and impacts. It is intended to inform the design of an implementation, systems and outcomes evaluation of HPOG. This evaluation (referred to as the HPOG National Implementation Evaluation) is being designed to address the following major research questions:

- How are health professions training programs being implemented across the grantee sites?
- What changes to the service delivery system are associated with program implementation?
- What individual-level outputs and outcomes occur (for example: recruitment, enrollment, retention, completion, certification, job entry, employment retention and advancement, and earnings)?
- What can be learned about *how* best to implement these programs for this population (what implementation and/or systems components are related to program outputs and outcomes)?
- What key components appear necessary or contribute to the success of these programs?

This literature review essay includes a section on CP program design and implementation, a section on outcome and impact studies and a section summarizing the implications of the research literature for the HPOG National Implementation Evaluation design.

Career Pathways Program Design and Implementation

This section first introduces the key programmatic elements and context of the career pathways (CP) framework. Following the introduction to CP programs is a review of the literature describing how programs design and implement CP elements and variations in program contexts.

Career pathways programs are varied in their design and implementation; there is no one CP model, but rather a framework that includes several common principles and approaches to vocational, academic and soft-skills training that organizations implementing CP programs relevant to HPOG typically incorporate into their work. These principles encompass the content and delivery of training, and the characteristics of participants for whom CP programs are most appropriate. The CP framework presented in this section aligns with the Career Pathways conceptual framework developed by Abt Associates for the Innovative Strategies for Increasing Self-Sufficiency (ISIS) Project, a random assignment evaluation of nine career pathway programs around the nation commissioned by ACF (see Fein, 2012).

Essential Components of the Career Pathways Framework

Content of Career Pathways Programs[1]

- CP programs provide training that is designed to expedite credentialing and placement.
  - *Modularization.* Many CP programs offer training in relatively short modules focused on specific industry-related competencies. Modularization expedites credentialing by allowing participants to choose only those modules most directly related to short-term career goals.
  - *Articulation with industry requirements.* Training modules and courses are associated with clearly defined and industry-recognized credentials and are sequenced to present a clear career pathway within a given occupation or industry.

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[1] In April, 2012, the U.S. Departments of Education, Health and Human Services and Labor issued a joint letter on career pathways that included a consensus definition of a career pathways program and its components. Although some of the terminology in the letter is different than the language used in this report, the essential elements of a career pathways framework are virtually the same. See http://wdr.doleta.gov/directives/attach/TEN/ten2_36_11.pdf. Further, a number of federal agencies are seeking ways to facilitate the development of career pathways programs through policy guidance, formula and discretionary investments. For example, the U.S. Department of Education's Office of Vocational and Adult Education (OVAE) issued a memorandum in June 2010 providing guidance on using Integrated Education and Training (IET) models supported by Workforce Investment Act (WIA) Title II funds to design career pathways. See http://www2.ed.gov/about/offices/list/ovae/pi/AdultEd/aefla-funds-for-iet.pdf. The Employment and Training Administration (ETA) of the U.S. Department of Labor (DOL) issued Training and Employment Guidance Letter (TEGL) No. 15-10 in December 2010, which explicitly encourages states and local areas to use career pathway strategies to support credential attainment. See http://wdr.doleta.gov/directives/attach/TEGL15-10acc.pdf. DOL's Trade Adjustment Assistance Community College and Career Training (TAACCCT) Grant Program also encourages the use of stackable credentials and career pathway strategies for delivering education and career training programs. See http://www.doleta.gov/taaccct/.

  - *Contextualization.* Academic training (GED prep, English language training, etc.) and/or soft-skills training (career readiness, personal skills, etc.) are integrated with applied content from the targeted industry. For example, CP programs targeting healthcare careers offer English as a Second Language (ESL) courses that feature medical terms.

- CP programs combine training with provision of support services. CP programs feature a range of supports for participants.
  - *Case management*. CP programs provide case management to help individuals in training access needed services and supports. Case management can be provided directly by the CP program or outsourced to social service agencies. Programs may vary widely in the frequency and structure of case manager contact with program participants.
  - *Academic/vocational counseling*. CP programs usually offer some academic and career counseling to help participants complete any required pre-training developmental education and to help participants choose their career path and goals.
  - *Peer mentoring and other social supports*. Some CP programs have organized their training courses around participant cohorts that meet outside the classroom on a regular basis to offer peer support and assistance.
  - *Financial supports.* CP programs provide financial supports directly, including resources for course materials, test fees, uniforms and/or transportation, and help participants access other financial supports such as childcare assistance, Temporary Assistance for Needy Families (TANF), and/or financial aid.
- CP programs engage employers in a variety of ways. CP programs may partner with employers to:
  - Design and/or implement programs,
  - Offer on-site training and internship opportunities, and/or
  - Facilitate placement and advancement of participants.
- CP programs collaborate with other key stakeholders and training and service providers. CP program operators partner with employers, training providers/institutions of higher education and support service providers to offer programs.
- Training is designed to fit the schedule and life circumstances of participants. Low-income adults who may be employed and/or have families need training programs that are accessible.
  - *Flexible scheduling.* CP programs may offer courses after working hours or during weekends or may allow individuals to complete training remotely as a means to facilitate training for working adults and/or parents.
  - *Modularization.* As indicated above, many programs offer training in relatively short modules, allowing participants to avoid making long-term commitments to training in order to upgrade their skills and to enter and exit training according to their needs and availability.
  - *Acceleration.* CP programs may shorten the time it takes to complete required training. They may focus, truncate or compress curricula and/or credit prior learning in accelerating progress toward accreditation or a degree to expedite training.

- Programs focus on serving economically and educationally disadvantaged target populations. CP programs are designed for individuals who are low-income, low-skilled and are unemployed, underemployed, or employed in low-wage "dead end" jobs without prospects for career and wage advancement. CP participants may also have low educational attainment, which has contributed to their poor labor market prospects. Others may have the GED or high school degree and even some college, but have not acquired strong vocational skills and experience.

The remainder of this section describes each of these CP components in more detail. It also discusses the literature highlighting "best practices" in regard to implementing these components. Few studies summarized in this section generally have strong designs to test the effectiveness of program designs or implementation strategies. Authors' discussions of best practices are based primarily on observations, interviews, expert opinion and outcome data and therefore should be interpreted as hypothesis-generation rather than confirmatory.

Career Pathways Programs: Core Curriculum and Supports

The course structure and content of CP programs are designed to impart career-centered competencies to the economically and educationally disadvantaged target populations. CP programs have developed a number of strategies to facilitate this goal. Below, we summarize the literature on modularization and articulation, contextualization, and accelerated learning.

As opposed to traditional job training programs where there is a single entry and exit point and a continuous trajectory ending in a credential, CP programs often structure training in competency-based modules with sequential points of career advancement (Estrada, 2010; Kazid & Liebowitz, 2003; Agrawal et al., 2007; Pleasants & Clagett, 2010; Warford, 2006). These training levels range from certifications to associates' and post-baccalaureate degrees (Choitz, Soares, & Pleasants, 2010; Hughes & Karp, 2006) and have multiple entry and exit points (Agrawal et al., 2007; Jenkins, 2006; Stephens, 2009). According to Pleasants and Clagett (2010) some states and community colleges have adopted policy changes to make it possible to break credentialing into these discrete modules, as well as to implement other features of the career pathways framework.

This training structure heightens the importance of curricular alignment among participating educational institutions and career pathways programs' designated training levels. The literature suggests that articulation agreements are vital to career pathways program implementation (Agrawal et al., 2007; Hughes & Karp, 2006; Warford, 2006). Credit articulation agreements should allow students to accrue credits that are articulated with higher degrees of industry certifications throughout a career pathways program (Zacker, 2011).

Career pathways programs should also provide students with "road maps" or career ladders that create explicit connections between career pathways program training and associated employment levels within an industry (Agrawal et al., 2007; Jenkins, 2006; Stephens, 2009; Estrada, 2010). This navigational tool should indicate the technical skills or credentials required for each job level and the associated labor market payoffs (Estrada, 2010; Zacker, 2011). The maps should also clarify transition points and places where students can easily exit or enter the program (Pleasants & Clagett, 2010). These road maps should enable low-income students to easily navigate critical points for advancement (Endel, Anderson, & Kelley, 2011). Career ladders jointly developed by educators and employers within specific industrial sectors are a common feature of career pathways programs that distinguish them from more traditional college curricula (Goldberger, 2005).

Karp's (2011) literature review of 128 books, journal articles, and reports regarding theories of student persistence and student support program evaluation stated that clarifying students' aspirations and enhancing their commitment was one of the mechanisms that most strongly encouraged positive student outcomes. Career pathways road maps can facilitate students' clarity and commitment by "clarifying utility" and "increasing planfulness." Promising practices in mapping a career ladder in the healthcare industry include: clearly identifying the competencies required for each rung of the ladder; basing training and educational plans on the needs of the employees and clearly identified, position-specific competencies; creating interim rungs when existing rungs on a ladder are far apart, and focusing initially on a limited number of positions (Zacker, 2011).

Contextualization is an instructional approach that creates explicit connections between the teaching of basic skills (reading, writing, or math) and occupational skills. Basic skills, for example, may be taught in the context of job-related documents and tasks, with a focus on a broader range of skills in addition to basics, e.g., oral language, problem solving, teamwork, research skills, and basic computer operations (Perin, 2011). Contextual instruction thus teaches skills that have direct reference to real world practices, and often has employer input into the curricula (Biswas & Kelley, 2011; Perin, 2011).

The career pathways literature consistently recommends that programs should include a remedial education component that uses contextualized curriculum to integrate occupational material and work-readiness skills with remedial education (Kazid & Liebowitz, 2003; Pleasants & Clagett, 2010; Stephens, 2009; Goldberger, 2005; Bragg et al., 2007; Jobs for the Future [JFF], 2010; Mazzeo, Rab, & Alssid, 2003; Zacker, 2011). This approach is hypothesized to make basic skills training more relevant to individuals seeking career training and economic advancement and is a departure from the traditional approaches that teach basic skills in the abstract (Alssid et al., 2002; Perin, 2011).

Perin's (2011) literature review synthesizes a large body of research on strategies that may improve the success of students who attend community college. The report describes two forms of contextualization, *contextualized instruction* and *integrated instruction*, which involve different teaching staff and instructional focuses. With contextualized instruction, basic academic skills are taught in the context of a specific subject matter, but the primary objective of the course is to teach basic skills. Integrated instruction incorporates basic skills instruction into the teaching of a specific subject matter to improve students' basic skills needed to learn the content material. This type of instruction is taught by context instructors and the objective is to increase students' ability in both academic skills and content knowledge. In addition to contextualized and integrated instruction, some states and colleges are implementing paired courses (basic skills courses paired with career or technical skills courses) or other models that add some basic skills learning to occupational training (Strawn, 2011).

Much of the career pathways literature advocates for contextualized instruction of basic skills through formal *Bridge Programs* (Pleasants & Clagett, 2010; Stephens, 2009; Bragg et al., 2007; Alssid et al., 2002; Agrawal et al., 2007; Kazid & Liebowitz, 2003; Estrada, 2010; Goldberg, 2005; Mazzeo et al., 2003). Bridge programs provide individuals with the targeted academic proficiency they will need to be successful in postsecondary training in their chosen careers (Estrada, 2010; Goldberger, 2005; Mazzeo et al., 2003). Bridge programs may also include soft-skills training in critical thinking, analytical skills, problems solving, teamwork, communication, time management, study habits, research tools, and basic computer operations (Estrada, 2010; Alssid et al., 2002; Perin, 2011).

Accelerated learning is a strategy to shorten the amount of time adults need to spend in developmental education and vocational training to gain competencies needed to develop genuine careers. Many experts suggest that career pathways programs should shorten the time needed to complete training components through compressing courses or curricular redesign (Endel et al., 2011; Hinckley & Hull, 2009; Zacker, 2011; JFF, 2010; Kazid & Liebowitz, 2003).

Basic skills integration (mentioned above) accelerates programs by avoiding the traditional remedial course sequence and instead placing developmental students directly into college-level courses (Edgecombe, 2011). The Washington State Integrated Basic Education and Skills Training (I-BEST) Program is a commonly cited basic skills integration approach. In the I-BEST model basic skills instructors and professional-technical faculty jointly design and teach college-level occupational classes that admit basic skills-level students and lead to a credential (Wachen, Jenkins, & Van Noy, 2011). The study of I-BEST programs by Jenkins et al. (2009) found that basic skills integration instruction is associated with improved educational outcomes.

Edgecombe (2011) found that there is a limited body of empirical literature that evaluates the effectiveness of both integrated contextualization and course restructuring models of acceleration. The author suggests accelerated models' student-centered pedagogy may contribute to the lower attrition and higher course completion rates associated with acceleration.

Support services are a key component of a career pathways framework because these services enable students to successfully balance school, work and family (Stephens, 2009). The purpose of student support services is to facilitate an accelerated pathway to college coursework by removing barriers to sustained enrollment, educational attainment and career advancement. Non-academic supports include services, interventions, and informal activities that help students address the social, cultural, and otherwise implicit demands of college, and to navigate the academic world of higher education (Karp, 2011). For these reasons, support services are considered a key retention strategy for career pathway programs (Wachen et al., 2011).

Also referred to as supplemental supports, support services are often a required component of programs that bridge the adult education/college skills gap, along with contextualized instruction and career development services (Estrada, 2010; JFF, 2010). Student supports can comprise an array of academic, nonacademic, and financial supports, ranging from financial aid, academic and career guidance, counseling services, job placement and case management to transportation and child care assistance, mental health services and addiction counseling, that can be implemented through a variety of providers and service delivery mechanisms (JFF, 2010; Bragg et al., 2007). To determine the types of support services that should be offered to students, researchers of career pathways programs discuss the need to identify and address academic and non-academic barriers to achievement (Kazid & Liebowitz, 2003; Estrada, 2010; Leinbach & Jenkins, 2008; Zacker, 2011; Karp, 2011; JFF, 2010; Pleasants & Claggett, 2010; Stephens, 2009). Some colleges offer one or more of the federal TRIO programs, which are outreach and student services programs designed to identify and provide services for individuals from disadvantaged backgrounds to help them "overcome class, social and cultural barriers to higher education" (Stephens, 2009).

The major types of support services discussed in the literature include: financial and income supports; logistical and material supports; supplemental academic supports; college readiness support services; job development and career supports; counseling and case management; and personal and social supports.

Financial Supports. Financial aid, training and counseling are critical to working adults and students with family commitments at risk of leaving college without earning a credential. They can be in the form of supportive state community college policies that subsidize the tuition, fees, books and supplies for low-income students to make it easier to attract participants (Alssid et al., 2002; Kazid & Liebowitz, 2003; Hinckley & Hull, 2009; JFF, 2010; Roder & Elliott, 2011). Financial supports may entail coaching students on how to save money, repair and maintain a good credit record, maximize their income, pursue homeownership and open checking and savings accounts (Goldberger, 2005; Estrada, 2010). They may also include emergency funds for short-term crises (e.g., loss of housing, medical emergencies), income supports that teach students about public benefits that may be available to them and their requirements, and assistance to students in applying for these benefits (JFF, 2010; Estrada, 2010).

Logistical and Material Supports. Assistance in obtaining childcare, transportation, housing, food and clothing are examples of logistical and material supports provided through career pathways programs (Hinckley & Hull, 2009; Jenkins, 2006; Stephens, 2009; Estrada, 2010; JFF, 2010).

Supplemental Academic Supports. Sometimes career pathways programs offer supplemental instruction or training outside of an integrated educational development or vocational training curriculum. Academic supports can include tutoring (one-on-one tutoring, group tutoring, drop-in centers); online and computer-based tutorial/skill development programs; study skills courses; study groups; academic-resource labs, where students can access computers, reference books, on-line resources, career-exploration tools, etc.; testing and accommodations for learning disabilities, and academic advising to help with course selection and choosing a major (Stephens, 2009; JFF, 2010). Supplemental academic supports can also support mainstreaming—the strategy of placing developmental students directly into college-level courses, thus bypassing the traditional remedial course sequence—by providing additional instruction through mandatory companion classes, lab sessions, academic counseling or other learning supports (Edgecombe, 2011).

College-Readiness Training and Counseling. Supports designed to prepare developmental education students for college may involve placement test preparation or academic courses in which classes are complemented with intensive contextual tutoring and test-taking skills (Agrawal et al., 2007; Estrada, 2010). College success courses also help students develop college 'know-how,' an understanding of what they are expected to know and do in college such as how to navigate the physical space of college, cultural knowledge, how to use student services, and strategies for attaining success in postsecondary education, such as study skills and resume writing (Karp, 2011).

Job and Career Supports. Another type of student supports is job development and career navigation assistance. Job-readiness training and job-seeking resources include coaching students on how to find a good paying job with the skills they presently have, skill building in resume writing, interviewing, and social networking, as well as workplace skills workshops, internships and job placement with entry-level training in higher-wage entry-level jobs (Estrada, 2010; Alssid et al., 2002; Choitz et al., 2010; Agrawal et al., 2007; Jenkins, 2006; Hinckley & Hull, 2009; Stephens, 2009). Programs may also include training in job retention and advancement skills (Fein, 2012). Career and vocational planning includes counseling courses, workshops, web-based assessments, career portfolios, and individual career plan development (Jenkins, 2006; Agrawal et al., 2007; Pleasants & Clagett, 2010). These services support workers in increasing their range of employment-related skills by improving their ability to compete for work opportunities of higher quality (Helmer & Blair, 2011). Work-

related or employability skills are transferable skills that enhance the effectiveness and efficiency of technical skills and are not job-specific, e.g. interpersonal relations, working in teams, critical thinking/common sense, analytical skills, problem solving, people skills, communications, time management, and study habits (Hinckley & Hull, 2009; Estrada, 2010).

Many career-focused services also incorporate pathway navigation support, which helps students identify their strengths and choose educational pathways that will enable them to qualify for their careers of choice, and acquire personal qualities and behaviors that will contribute to success in their chosen careers, for example, by teaching corporate workplace norms of behavior, dress, and communication (Kazid & Liebowitz, 2003; Hinckley & Hull, 2009; Roder & Elliott, 2011). Having a flowchart or map provides a visual representation of the career pathway that clearly illustrates how a person progresses through a pathway; it should show transition points, places where students can pause their education and easily reenroll, opportunities to earn credentials, and the labor market payoffs for finishing each segment of the pathway (Pleasants & Claggett, 2010; Estada, 2010; Zacker, 2011).

In addition to integrating job development services into programs, career pathways programs are also designed to allow students to participate in both educational and employment opportunities (Goldberger, 2005; Jenkins, 2006; Kazid & Liebowitz, 2003; Estrada, 2010). To accommodate working students, many programs hold courses at convenient locations and offer flexible scheduling options such as part-time, evening, or weekend classes. Offering workplace-based e-learning or independent study options are also offered by some programs to provide students more flexibility. (Kazid & Liebowitz, 2003). Bragg et al.'s (2007) literature review and cross-case analysis of career pathways programs found that both students and administrators reported that flexible scheduling was a main program component that reduced attrition.

Counseling and Case Management. An assigned coach or staff person may provide intensive case management, coaching or counseling services to work proactively with students to identify barriers to persistence early on and help students work through crises and life challenges. Case managers may also provide referrals to outside social service agencies, health services, housing assistance, etc. (Goldberger, 2005; Jenkins, 2006; Stephens, 2009; Pleasants & Claggett, 2010; JFF, 2010).

Personal Supports. Personal supports, which may overlap with other categories, assist students with personal issues such as substance abuse, domestic violence, self-discipline, or learning disabilities (Hinckley & Hull, 2009; Estrada, 2010; Pleasants & Claggett, 2010).

Social Supports. Non-academic, social supports may entail peer mentoring and peer group identification, such as learning communities in which a group of students take classes and engage in activities together, and may also include a student success course that helps students acclimate to college and engage in major and career exploration (Stephens, 2009; JFF, 2010; Zacker, 2011; Karp, 2011). The intervention may be structured around a peer cohort or group pedagogy to promote interaction in and outside of class, via interactive pedagogy, required study groups, or mandatory meetings and communication with professors (Karp, 2011).

Although strong empirical evidence on their effectiveness is limited (Edgecombe, 2011), the career pathways literature discusses certain attributes of student support services that are considered important contributors to successful career pathways programs. The following attributes are mentioned in the literature:

- *Comprehensive.* A comprehensive array of support services, in combination with job readiness training content within the curriculum, flexible scheduling, and peer support groups, reportedly reduce participant attrition (Bragg et al., 2007; Endel et al., 2011; Pleasants & Claggett, 2010). Low-income, working adults and students with family commitments in particular can benefit from more flexible and comprehensive financial aid strategies (Pleasants & Claggett, 2010).
- *Flexible.* Redesigning credential programs to afford greater flexibility for working adults is critical to the success of accelerated strategies. For example, programs with evening or weekend schedules, online or independent study components, and multiple entry and exit points allow adults to move easily between the labor market and further education and training in order to advance in their careers and upgrade their value in the labor market (Kazid & Liebowitz, 2003; Stephens, 2009; Pleasants & Claggett, 2010). Support services that help to address systemic barriers in educational institutions by cultivating a culture of learning and support require creativity and flexibility to adapt educational requirements and protracted timelines to the needs of the worker-students (Zacker, 2011).
- *Coordinated and Integrated*. Researchers emphasize the importance of career pathways efforts being part of a coordinated and integrated system that connects a series of educational programs with integrated work experience and support services (Agrawal et al., 2007; Estrada, 2010; Kazid & Liebowitz, 2003; Pleasants & Claggett, 2010). "Taking innovative and successful practices to scale will require systems change and alignment at the federal, state, and local, and institutional levels" (Pleasants & Claggett, 2010).
- *Intensive and Enhanced.* Intensive support services are needed to help students who are struggling, for example, intensive basic academic remediation to prepare students for college-level work and pass program entrance exams, intensive and mandatory contextual tutoring and test-taking skills, intensive career counseling and transparent pathway navigation support, and intensive case management and advising to help students work through crises and life challenges (Choitz et al., 2010; JFF, 2010; Karp, 2011; Kazid & Liebowitz, 2003). Career pathways programs are considered advantageous over traditional community college programs because the support services are intentionally enhanced and amplified where needed to help students succeed in accelerated programs (Kazid & Liebowitz, 2003; Pleasants & Claggett, 2010).
- *Long-Term.* Support services should be long term supports—not a "quick fix" (Hinckley & Hull, 2009). Interventions need to extend beyond a semester or two to achieve better outcomes (Karp, 2011).
- *Pro-Active.* Non-academic supports should be pro-active so that students are forced to encounter them, e.g. by making participation mandatory and/or integrated into the regular curriculum of academic subjects (Karp, 2011). "Intrusive advising" supplements traditional advising in various ways (required meetings, lower counselor-student ratios, assigned counselors or mentors, or longer, more intensive counseling sessions) (Karp, 2011).

Employer Engagement

Once students are enrolled in a career pathways program, employers play a critical role in providing training opportunities, including classes, internships, work-study, and apprenticeships.[2] The literature emphasizes work-based learning and "learning by doing" through class projects, laboratories, simulations and internships (Hughes & Karp, 2006; Jenkins, 2006; Stephens, 2009). To get the most out of the career-focused curriculum, students should become employed by participating employers at least on a part-time basis (e.g., 30 hours/week), with paid release time and benefits, while they continue their education (Hinckley & Hull, 2009). Moreover, effective teaching and evaluation of employability skills require the participation of college and employer mentors (Hinckley & Hull, 2009).

Clinical or on-the job experience is particularly critical for programs that prepare participants for healthcare jobs; it can be offered through rotations, training at the work site, work-based learning strategies, or summer internships that blend hands-on experiences in hospitals with classroom and lab experiences (Warford, 2006; Estrada, 2010; Biswas & Kelley, 2011). Similarly, Year Up designed a curriculum that meets the needs of its corporate partners, and obtains employer commitments to sponsor and provide on-the-job training including internships; many of their interns obtain regular jobs with their employers after program completion (Roder & Elliott, 2011).[3] Year Up employer partners also benefit from having access to a pipeline of trained employees (Roder & Elliott, 2011).

In addition, work-based learning opportunities afford students valuable connections to business and industry professionals. Combining work-related basic and life skill instruction with an internship gives students the opportunity to gain hands-on, work-based learning experiences while potentially earning wages, and allows them to interact with professionals in their fields of interest (Kazid & Liebowitz, 2003). Arguably, business partners are more likely to share other resources, such as internship placements, when the resources do not represent additional business costs (Warford, 2006).

Beyond providing internships and other training opportunities, there are a number of ways in which employers and educational institutions can collaborate to enable closer integration between work and learning (Zacker, 2011). In a practice brief on the national *Jobs to Careers* initiative, Zacker outlines promising strategies for implementing career pathways to achieve a stable, skilled healthcare workforce.[4] A key feature of this approach is the use of work-based learning made possible by strong employer buy-in, support and active engagement in the program (Zacker, 2011).

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[2] Note that so-called sectoral training programs focus on a specific industrial sector and align their instruction with the industry's needs. While the career pathways framework overlaps with this important aspect of sectoral programs, not all sectoral programs necessarily incorporate other career pathways principles.

[3] Year Up is an intensive year-long program for high school graduates and GED recipients aged 18-24 that combines intensive skill training with corporate internships.

[4] Jobs to Careers is an initiative of the Robert Wood Johnson Foundation and The Hitachi Foundation, with additional support from the U.S. Department of Labor. A hallmark of *Jobs to Careers* is work-based learning: frontline employees master occupational and academic skills in the course of completing their job tasks and fulfilling their day-to-day responsibilities. While working full time, frontline employees enter college and earn academic credit for workplace training. Other learning approaches in *Jobs to Careers* include technology-enabled, experience-based, and traditional worksite and off-site learning.

Some career pathways experts suggest that well-designed programs also provide workforce-oriented scaffolding, with incremental steps and an articulated sequence of courses that lead to an industry-recognized certificate or licensure, and/or postsecondary credentials that position program completers for employment in high-demand careers (Pleasants & Claggett, 2010). This requires that education and training at every level are closely aligned with jobs and industry sectors important to local and regional economies (Pleasants & Claggett, 2010). To this end, employers may contribute to curriculum and program design. They also may refer current employees for training, offer students clinical and internship experiences, and provide employment opportunities (Stephens, 2009; Estrada, 2010, Hughes & Karp, 2006; Stephens, 2009; Biswas & Kelley, 2011; Roder & Elliott, 2011). Program eligibility requirements are often based on employer specification of minimal education requirements (Goldberger, 2005).

To support CP program implementation, some CP researchers recommend having employers work closely with educational institutions to develop educational strategies that support a learning-friendly workplace and a work-friendly education. Employer support can be provided in the form of allowing employees paid release time, pre-paid tuition assistance and job coaching, and mentoring. Employers have an influential role in promoting systems change within education institutions by providing upper-management champions, strong support from human resources, and supervisor involvement, which can enhance student accountability (Zacker, 2011). Employers also have the ability to create attractive incentives and rewards; for example, a pay raise has more impact than a one-time bonus, and non-monetary rewards (e.g., job security, job enrichment, and confidence in one's ability to pursue additional education) can be very valuable to working learners (Zacker, 2011). Lastly, employers can play an important role in recruiting, screening, and promoting participation in career pathways programs. Promising strategies include marketing directly to eligible employees, using supervisors and managers to help identify candidates, and engaging executive leadership in placing a high priority on the program (Zacker, 2011).

Collaboration with Other Key Stakeholders and Providers

CP programs often provide a comprehensive array of services intended: (1) to prepare disadvantaged individuals for positions and sectors in which there is demonstrated need and (2) to facilitate placement and retention. Accordingly, partnerships typically involve educational institutions (such as community colleges, adult basic education providers, and/or vocational training institutions), employers, Workforce Investment Boards (WIBs), social service agencies, community-based organizations (CBOs), and support service providers (Agrawal et al., 2007; Biswas & Kelley, 2011; Choitz et al., 2010; Goldberger, 2005; Helmer & Blair, 2011). CP programs may be run as national or state-level initiatives, community college-based programs, or regional or local efforts operated by nonprofit community-based organizations or local public agencies (Agrawal et al., 2007; Pleasants & Claggett, 2010).

Each of these partner organizations contributes to CP programming consistent with its core capacities and resources. Many career pathways programs collaborate with economic development agencies, local industry, or state and local WIBs to assess local and regional labor market needs (Stephens, 2009; Pleasants & Claggett, 2010). Using labor market data, these organizations identify high-demand sectors and analyze projections of workforce needs in emerging industries (Stephens, 2009; Pleasants & Claggett, 2010). Other agencies may provide training funds through the Workforce Investment Act (WIA) or TANF (Alssid et al., 2002; Biswas & Kelley, 2011; Endel et al., 2011; JFF, 2010). CP programs may engage support service providers, depending on the needs of the population

they serve. Multi-faceted partnerships may serve individuals with a variety of skills and barriers and, accordingly, may engage a range of service providers (Choitz et al., 2010).

Community colleges are often at the center of career pathways partnerships (Alssid et al., 2002). They and other organizations running CP programs identify gaps in education and training for targeted industries and positions. Community colleges and other training providers are charged with developing programs that address those gaps and align with employer demand (Stephens, 2009). They may also measure the effectiveness of efforts to improve participant educational attainment and economic advancement in targeted industries (Jenkins, 2006; Warford, 2006; Stephens, 2009).

Educational institutions also provide targeted training. In cases where several educational institutions are involved in implementing a CP program, these institutions may establish articulation agreements that make credits easily transferable (Biswas & Kelley, 2011; Stephens, 2009).

Program advisors may refer students to on-campus supports, or colleges may coordinate with external agencies, CBOs or faith based organizations in delivering student supports as needed (Washington State Board, 2005; Hinckley & Hull, 2009; Pleasants & Claggett, 2010).

Focus on Serving Economically and Educationally Disadvantaged Populations

The career pathways framework targets low-income populations with limited vocational experience and skills that prevent them from accessing higher-wage occupations or career advancement opportunities (Alssid et al., 2002; Stephens, 2009). This target population encompasses individuals with a range of educational backgrounds and employment experience—from those without the GED or a high school degree to those with some post-secondary education and a range of occupation-related skills and experience, from the unemployed with no previous experience to lower-level incumbent workers who need to upgrade their current training (Alssid et al., 2002). Within that range, there is important variation in participants' educational attainment, skills and employment experience.

For example, Voorhees and Muffo (2010) analyzed demographic data of five institutions participating in the scaling up of the national *Breaking Through* initiative, which supports career pathways programs at community colleges. The analysis reported that among students participating in the career pathways programs in the 2009-2010 academic year, the education levels prior to entering varied. Among the 428 participants with available education data, about 36 percent had not completed high school, 46 percent were high school graduates, and 10 percent had some postsecondary education experience.

Other studies also indicate relatively low education levels for career pathways students. Bragg et al. (2007) conducted a cross-case analysis of three career pathways programs: 1) Carreras en Salud at Instituto del Progreso Latino (IPL) in Chicago, Illinois; 2) General Service Technician (GST) at Shoreline Community College in Shoreline, Washington; and 3) Career Pathways Initiative (CPI) at Ouachita Technical College in Ouachita, Arkansas. The analysis found that although the programs' target populations varied, there were several common student characteristics across the three programs. All of the student populations included immigrants, especially English language learners (ELLs). Many of the students lacked a high school diploma, functioned at very low literacy levels, and were unemployed or employed in low-wage jobs.

On the other hand, some career pathways select relatively better educated individuals among the target population. Wachen et al.'s (2011) field study of Washington State's I-BEST model compared

the characteristics of I-BEST students, non-I-BEST workforce development students, and non-I-BEST non-workforce development students taking basic skills courses in Washington State community or technical colleges in 2006-2007 or 2007-2008. The study showed that on average I-BEST students were more likely than the other basic skills students to be older, female, have a GED or high school diploma, and be a full-time student.

Other career pathways programs also tend to select or attract relatively more competent students. For example, the Helmer and Blair (2011) case study of the Carreras en Salud career pathways program found that at the time of program enrollment about 80 percent of participants had the GED or high school degree and about half also had some post-secondary education. The majority (56 percent) of students were employed at enrollment, only 25 percent of which were employed within the healthcare sector, with a mean hourly wage of $11.06.

In addition to varying on the education and employment backgrounds of selected participants, career pathways programs also vary in terms of targeting other populations. For example, Stephens (2009) explored statewide career pathways efforts in Arkansas, Kentucky, Oregon, Washington, and Wisconsin. Programs generally targeted low-income adults and/or underemployed workers with low educational attainment. The Arkansas statewide career pathways program targets TANF-eligible adults. Kentucky's career pathways efforts target underemployed or "unprepared" individuals with limited basic skills and educational attainment as well as high school students in postsecondary education and incumbent or dislocated workers wanting to upgrade their skills. Career pathways programs in Washington state target adult learners with limited language and/or basic skills and adult learners with incomes at or below 200 percent of the federal poverty line. RISE in Wisconsin is focused on adult workers with low earnings and little postsecondary education experience.

Outcome and Impact Studies

In this section, we review selected research findings on the outcomes and impacts of CP and related programs. We review outcome studies first since these are most relevant to the development of the HPOG National Implementation Evaluation design. Although there is much information in the literature about outcomes for career pathways programs, there is little conclusive evidence as yet about impacts for these programs (Holzer & Martinson, 2005; Martinson & Holcomb, 2007). To date, there is no completed rigorous impact evaluation of a comprehensive career pathways program;[5] however, several are currently underway in the field. We briefly describe these studies and then provide summaries of impact evaluations of several programs with some content overlap with the CP framework as evidence that CP programs have the potential to improve participant outcomes in employment and earnings.

Outcome and Non-Experimental Studies of Career Pathways Programs

The Aspen Institute's *Courses to Employment: Sectoral Approaches to Community College/Nonprofit Partnerships* features outcome studies of two CP initiatives in healthcare training relevant to HPOG: *The Initial Education and Employment Outcomes Findings for Students Enrolled in Carreras en*

[5] Note that an experimental impact of a summer bridge program including some of the core elements of the career pathways framework was completed in 2012; see below (Barnett et al., 2012).

Salud Healthcare Career Training from 2005 through 2009 (the Carreras Study)[6] and *The Initial Education and Employment Outcomes Findings for Students Enrolled in Healthcare Career Training from 2003 through 2009: Capital IDEA and Austin Community College Partnership* (the Capital IDEA Study). Although these evaluations are outcome and not impact studies, they illustrate the potential for related programs to help individuals obtain training, certifications and employment in healthcare. Moreover, both Carreras en Salud and Capital IDEA are career pathways programs with instruction designed around progression through defined career ladders.

The Carreras Study documents a program that targets the healthcare industry, offers support services and training, and is intended to serve both employers and workers. In addition, Carreras is run by a partnership that includes a community-based organization, a WIA provider and a community college. It offers contextualized language and basic skills courses, and features a series of progressive training modules. Also, as mentioned above, it fits the general definition of a career pathways program. Carreras targets low-income Latinos living in Chicago.

The Carreras Study describes the experiences and outcomes of 933 students who enrolled in the program between 2005 and 2009. It reports individuals' progression through and time spent in career pathways, as well as their academic and employment outcomes. It also analyzes differences in results for groups of individuals who enrolled in and completed various levels of training.

Almost all (97.5 percent) Carreras training participants were Latino and most (93 percent) were women. One hundred eighty-five students completed CNA training; 171 completed an LPN program and 15 completed an RN program.

Employment rates increased for individuals who completed the CNA program. Annual earnings were slightly higher for CNA completers who were employed in healthcare than for individuals who completed the program but were employed outside of the healthcare field ($22,362 compared to $20.901 in 2009). Employment also increased for individuals who completed LPN training. LPNs working in healthcare had average annual earnings of $34,068, compared to $20,512 for individuals working outside of the field. By the end of the study, 26 students had advanced from the LPN program into the RN program; 15 had completed the training by that time and 11 were still active in the training.

Although the outcome findings of the Carreras are useful, the study was limited in its ability to obtain complete non-employment-related follow-up data on many in the sample of 933 students who began training.[7] Notably, an important pattern often observed in post-secondary education and training for low-income populations is the low completion rate; only about 35 percent of Carreras program enrollees completed one or more of the three training courses.

The Capital IDEA program is another healthcare training effort profiled as part of the Aspen Institute report on sectoral initiatives. This program is run by Capital IDEA, a nonprofit that provides a range of support services, and Austin Community College, which provides most of the training in the program. This program is intended to help disadvantaged individuals prepare for college-level courses

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[6] Note that Carreras en Salud is a study site in the ISIS project.

[7] Researchers ultimately relied on Unemployment Insurance (UI) quarterly wage records for summary information on quarterly employment and earnings.

in healthcare, enroll into healthcare trainings and, ultimately, obtain in-demand jobs in healthcare. Students may enroll in a variety of training courses, depending on their levels of skills and education. They may participate in developmental education, English as a Second Language (ESL), GED training and test-prep designed to help them pass a state-mandated exam that qualifies them to enroll in community college courses. Throughout their tenure in the program, students are offered case management and help with job placement. Program staff also have modified some courses so that they can be completed on weekends and other non-traditional times. Finally, like Carreras en Salud, Capital IDEA is also organized around career ladders and coursework designed around progression in the healthcare professions.

The Capital IDEA study describes the experiences and outcomes of 991 students who enrolled in the program between 2003 and 2008. It reports the courses individuals took, the number of enrollees who completed various courses, the time individuals spent in career pathways, and participants' employment and earnings.

Most Capital IDEA participants were women (88 percent). Forty-four percent of participants were Hispanic; 26 percent were Black or African American and 20 percent were White. The average participant age was 27. Seventy percent of participants had children and 37 percent were single parents. Most participants (90 percent) had their GEDs, high school degrees or higher levels of education.

Seventy percent of the students who enrolled in the program during the study period took a pre-requisite course for healthcare training. Thirty-seven percent of all program enrollees also entered an advanced healthcare program at a local community college. Twenty percent of the study population and 52 percent of the students who began advanced healthcare training graduated from the training program. Students completed a variety of healthcare training, with the largest number (82) completing training to become registered nurses. In the year prior to the program enrollment, program graduates had median earnings of $12,952; in the first full year after graduation, these same individuals had median earnings of $44,222.

Participants took varying amounts of time to complete pre-enrollment training and to complete subsequent healthcare training. Depending on the pre-requisites individuals needed to complete to enroll in healthcare training and the specific training individuals enrolled in, the median time period graduates took to complete healthcare training ranged from 56 months to slightly over five and a half years.

As part of the Joyce Foundation's Shifting Gears initiative, the State of Illinois implemented two model bridge programs: Model 1 (developmental education) sought to move students from developmental education to college-level coursework; Model 2 (adult education) sought to move students from adult education and English literacy programs to post-secondary education (for the following summary of the Illinois Shifting Gears pilot demonstration evaluation, see Bragg, Harmon, Kirby, and Kim (2009, 2010)). The two models included some of the core features of career pathways programs:

- *Contextualized instruction* that integrates basic reading, math, and language skills and industry or occupation knowledge;
- *Career development* that includes career exploration, career planning within a career area, and understanding the world of work; and

- *Transition services* that provide students with information to navigate the process of moving from adult education or remedial course work to credit or occupational programs.
  - Key findings included: Nearly half of all students completed bridge programs, with a higher rate of completion (72 percent) for students enrolled in developmental education bridge programs. The authors caution interpreting these comparative results because students enrolled in the two models differed, with developmental bridge programs enrolling a more academically prepared student group than the adult bridge programs.
  - Of the relationships examined, the follow components of the demonstration programs were moderately to highly correlated with pilot bridge program completion:
    - the percent of students receiving admissions and financial aid assistance at least once;
    - the percent of students receiving advising at least once;
    - the percent of students receiving transportation assistance at least once; and
    - the frequency of student meetings with an assigned transition coordinator/case manager.

Impact Studies of Related Initiatives

Several rigorous impact evaluations of career pathways programs are currently underway in the field. The Innovative Strategies for Increasing Self-Sufficiency (ISIS) Project was commissioned by ACF in 2007. The ISIS Project, which is led by Abt Associates, is a multi-site, random assignment evaluation of promising career pathway programs. The nine partner organizations being evaluated as part of ISIS are Des Moines Area Community College (Prepared Learner Program), the I-BEST Program in select colleges in Washington State, Instituto del Progresso Latino (Carreras en Salud), Madison Area Technical College (Center for Adult Learning), Pima Community College (Pathways to Healthcare), San Diego Workforce Partnership (Bridge to Employment), Valley Initiative for Development and Advancement, Workforce Development Council of Seattle-King County (Health Careers for All) and Year Up. Three of the nine partner organizations are HPOG program grantees.

In 2011, ACF contracted with Abt Associates to conduct the HPOG Impact Study. This study is an experimental impact study of 20 HPOG grantee programs designed to estimate impacts on specific program components and features, as well as on programs as a whole. Results from the study are expected in 2016.

Additionally, Abt Associates is leading a random assignment evaluation of Project QUEST in San Antonio.[8] The evaluation will examine whether participating in Project QUEST improved participants' employment and earnings over control group members at two and four years after random assignment, and will address implications for sector-focused training in partnership with community colleges.

In addition to the ongoing impact evaluations of career pathways studies listed above, an experimental impact study of a summer developmental bridge program was completed in 2012 (Barnett et al., 2012). The developmental summer bridge programs in the study were offered in the summer of 2009, primarily to recent high school graduates, at eight post-secondary institutions.

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[8] This evaluation was begun by Public Private Ventures (P/PV) and transferred to Abt Associates in 2012 when P/PV went out of business.

Students attended the developmental summer bridge programs for three to six hours daily for four to five weeks. All of the developmental summer bridge programs included four common features: accelerated instruction in math, reading, and/or writing; academic support; a college knowledge component; and the opportunity to earn a $400 stipend.

The summer bridge program evaluation employed an experimental design to measure the effects of the programs on college enrollment and success. At each college, students who consented to participate in the study were randomly assigned to either a program group that was eligible to participate in a developmental summer bridge program or a control group that was eligible to use any other services available at their college but were not permitted to enroll in the summer bridge programs.

After two years of follow-up data collection, the key study findings included:

- The programs had no effect on the average number of credits attempted or earned.
- The programs had an impact on course completion in the first college-level course in math and writing, but no impact on first college-level course completion in reading.
- On average, students in the program group passed their first college-level math and writing courses at higher rates than students in the control group. By the end of the two-year follow-up period, however, the differences between the two groups were no longer statistically significant.
- There was no evidence that the programs affected persistence. During the two-year follow-up period, students in the program group enrolled in an average of 3.3 semesters, and students in the control group enrolled in an average of 3.4 semesters; this difference is not statistically significant.

In addition to the foregoing impact studies of career pathways program, the research literature includes some recent impact studies of sectoral training programs. Sectoral workforce development programs incorporate many career pathways program components: they typically serve economically disadvantaged populations, provide skills training, and have an explicit focus on engaging employers and on meeting their needs. They also conduct screening to ensure that individuals enrolled in training have the skills, background and motivation necessary to complete programming and may offer both support services and contextualized basic skills training. In addition, sectoral programs target specific industries and may engage in efforts both to organize employers and to improve the quality of low-wage jobs within those industries (Maguire, Freely, Clymer, Conway, & Schwartz, 2010). A major difference from CP programs is that sectoral programs do not necessarily include an articulated career ladder or “lattice” approach to vocational training, an essential element of the CP framework.

Public Private Ventures’ *Sectoral Employment Impact Study* (Maguire et al., 2010) is an impact evaluation of sectoral employment programs. This two-year, randomized control trial evaluated three sectoral programs that train workers for skilled positions in a range of industries, including healthcare, manufacturing, information technology and construction. The study assessed impacts on employment, earnings, hourly wages and access to work-related benefits. The study considered variation in impacts for a number of subgroups, including welfare recipients and individuals with a criminal background and other variations associated with participant demographics, employment

experience, and educational background. It also assessed impacts for each of the three programs in the study.

The evaluation targeted programs that had been operating for a minimum of three years, graduating a minimum of 100 individuals per year, and targeting jobs that paid a minimum of $8 per hour. All three programs served "disadvantaged populations," although participant risk factors varied among programs. At one program, a significant number of program participants (45 percent) had been convicted of a crime and 38 percent had been incarcerated.[9] Forty percent of individuals at that program had been on welfare. Fifty-nine percent of participants at another program were current or formal welfare recipients although only three percent had been convicted of a crime. Fewer participants at the third site had been on welfare (only 14 percent) and another 14 percent of individuals had been convicted of a crime (Maguire et al., 2010). Programs included in the study offered training that was focused on a specific sector or sectors and that took no more than a year to complete. The evaluation also targeted programs that were considered high performers in terms of graduation and placement rates. Researchers selected three of 25 sites nominated for participation in the study.[10]

Results from the *Sectoral Employment Impact Study* based on follow-up interviews 24 to 30 months after random assignment suggest that sectoral programs can increase the employment and earnings of traditionally disadvantaged workers. Over the follow-up period, treatment group participants were employed an average of 1.3 months more than individuals in the control group. Individuals enrolled in training also earned about $4,500 more than individuals in the control group over a two-year period. Most of this increase occurred during the second year of the study, consistent with the fact that training occurred largely in the first year after random assignment. On a related note, treatment group members also were more likely to work in jobs with higher wages and benefits.

Of particular relevance to the HPOG National Implementation Evaluation, two of the sites in this study featured programming specifically targeted to the healthcare sector. Healthcare program participants at both sites experienced significant increases in total earnings. In both cases, most gains occurred during the second year after random assignment. Participants also worked for more months than control group members and worked in jobs with higher wages. These impacts also held for various subgroups of interest, including African-Americans, women, youth, former welfare recipients and individuals who had been incarcerated.[11]

A Promising Start: Year Up's Initial Impacts on Low-Income Young Adults' Careers (Roder & Elliott, 2011) is a small-scale random assignment impact study of a sectoral employment effort that does not target healthcare. Year Up trains individuals for careers in information technology and

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[9] Here, we report demographics for individuals in the treatment groups at each program.

[10] See Maguire et al. (2010), Appendix A for more detail on how sites were selected for this study.

[11] There were not significant results for all of these subgroups in both programs, although there were significant results for each subgroup in at least one of the programs. In addition, Wisconsin Regional Training Partnership participants could participate in healthcare, manufacturing or construction training. Although total results were reported for each of these industries, subgroup analysis by industry was not included. Accordingly, the subgroups reported here from that study may have experienced impacts in any of these three efforts.

investment operations.[12] It provides urban youth ages 18 to 24 with six months of vocational and professional skills training and with six months of internships with partnering employers. Students have access to case managers who provide counseling and who facilitate access to other supports. Students also receive help with job search.

The study was conducted at three Year Up program sites: Boston, New York City and Providence. One hundred ninety-five young people enrolled in the study; 135 were randomly assigned to the treatment group and 60 were assigned to the control group. Study participants were surveyed at baseline and again between 24 and 30 months after random assignment. Individuals in the control group were embargoed from program services for ten months, but could receive training and case management through other programs.

Results from this study indicate that the program generated significant earnings increases for participants. In the year after the program, mean annual earnings for treatment group members were 30 percent higher than earnings for individuals in the comparison group ($15,082 compared to $11,621). Since both groups had statistically equivalent mean annual hours of work, the difference in annual earnings is likely due to the fact that Year Up participants earned an average of $2.26 more per hour than control group members. The difference in treatment group and control group members' quarterly earnings decreased at the end of the second year.

The impact evaluation of the national *Employment Retention and Advancement (ERA) Project* (Hendra et al., 2010) is another recent impact study of a workforce development program. ERA provided some of the same kinds of supports to participants that career pathways programs provide and, like HPOG, targeted TANF recipients and was funded by the U.S. Department of Health and Human Services (HHS). Like many career pathways programs, ERA provided supports intended to help workers remain or advance in employment. ERA targeted current and former welfare recipients, many of whom were single mothers; some of these individuals were employed while others were not (Hendra et al., 2010). The ERA study used a random assignment design at each of twelve participating sites. Random assignment occurred between 2000 and 2004, and individuals were tracked for between three and four years after random assignment. The combined study sample included about 45,000 individuals. It assessed programs' effect on welfare receipt and the receipt of food stamps, as well as on retention, earnings and advancement (defined in terms of earnings increases).

Participating programs implemented "innovative and diverse employment retention and advancement models developed by states and localities for different target groups." These models included financial work incentives, supported employment, education referrals or incentives and counseling on job-related issues. Most were supported by existing public funding and not special demonstration grants (Hendra et al., 2010, p. 24). Unlike the sectoral programs described earlier in this section, programs in ERA were not particularly focused on meeting specific employers' needs or demand.

Results for the programs involved in ERA were inconsistent. The evaluation showed gains in employment, retention, wages and advancement for participants in three of twelve programs. These three programs increased annual earnings by between seven and fifteen percent relative to control group levels. The timing and extent of impacts varied among the sites. In some sites, impacts

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[12] Note that Year Up is also participating in the ISIS evaluation. ISIS will test Year Up on a national level.

weakened over time; in others they grew more substantial. In two of the three sites that showed effects, impacts were largely driven by individuals' entry into different jobs after random assignment (and not by individuals' progress within specific jobs). Using non-experimental methods, the researchers suggest that the three programs' success may be due to their implementation of several strategies. Supplementing workers' earnings and matching workers with jobs that pay relatively high wages were strategies that the three comparatively successful sites employed.

Another impact study relevant to HPOG is *Scaling Up Preliminary Data Analysis* (Voorhees & Muffo, 2010). This report summarizes early non-experimental impact findings reported at five of the 35 institutions participating in the expansion of the national *Breaking Through* initiative. Breaking Through incorporates many program components associated with career pathways, including: accelerated learning; comprehensive support services (including academic, economic and social supports); connections to and alignment with outside supports and programs; and efforts to ensure that training meets employers' needs and results in jobs.

Scaling Up Preliminary Data Analysis summarizes demographic and outcome data of 561 students participating in Breaking Through at the five study colleges in 2009 and 2010, and contrasts outcomes for Breaking Through students with students in comparison groups. Although the composition of comparison groups varied among the five sites, four out of five used a sample of other community college students who either had scores on intake assessments that were similar to those of program participants or who were enrolled in developmental education courses. One site developed a comparison group of students who enrolled in the same courses that Breaking Through participants took, but who did so prior to Breaking Through.

The study has two important limitations. First, the comparison groups used in four of the five study sites are comprised of students who did not choose to participate in Breaking Through, indicating important unobserved differences from Breaking Through students.[13] Additionally, it only captures data regarding student performance during the 2009-2010 academic year; the study does not present findings regarding degree attainment or employment, both critical goals for career pathways initiatives.

The study found that "short-term retention rates for Breaking Through sites are higher than historical rates for community college students (Voorhees & Muffo, 2010)." The study also noted that Breaking Through participants made gains in reading and math during the study period. At one site, Breaking Through students' gains in reading and math were almost double those of students in a comparison group; at other sites, Breaking Through students completed various program components at faster rates than members of comparison groups. Although these findings are promising, they should be considered with caution, given the selection issues around the Breaking Through treatment sample.

As indicated above, the study has limitations as an impact evaluation, but the intervention itself poses important challenges for evaluation that are instructive for future efforts. First, although programs were required to implement all four Breaking Through strategies listed above, the strategies are

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[13] One college used a comparison group of students taking courses before the Breaking Though program was implemented, so they could not have chosen to participate. However, this comparison group also introduces selection bias in the findings since it is composed of students who would have chosen Breaking Through and students who would not have chosen the program.

sufficiently general to allow for important variation across participating colleges. The report also notes that a challenge in chronicling student progress in career pathways programs is the fact that programs are flexible and "operate in a continuous open-entry and open-exit fashion" and that there are not distinct cohorts of participants (Voorhees & Muffo, 2010). As a result, they track the percentage of Breaking Through students who progress from first- to second-term (75 percent) and note that this rate is higher than the rate reported in other assessments of first-time community college students (58 percent to 61 percent) (Clagett, 1997).

Below is a table summarizing the key program features and findings of the outcome and impact studies reviewed in this section.

Career Pathways Program	Employment Target	Participant Characteristics	Training Program Features	Collaboration Relationships	Employment /Training Outcomes	Earnings Outcomes
Outcome Studies						
Carreras en Salud Healthcare Career Training	CNA, LPN, RN training and jobs in healthcare	Low-income, Latino women in Chicago	Contextualized language and basic skills courses Series of progressive training modules Organized around career ladders and coursework designed around progression in healthcare profession	Collaboration of a community organization, a WIA provider and a community college	Employment rates increased for individuals who completed the CNA and RN programs 26 students advanced from LPN program into RN program; 15 had completed the training by end of program and 11 still active in the training	Annual earnings slightly higher for CNA and LPN completers employed in healthcare than for completers employed outside the healthcare field (only slightly for CNA completers and substantially for LPN completers)
Capital IDEA	Obtain on-demand jobs in healthcare	Disadvantaged women, most with children, who had their GED/HS degree	Organized around career ladders and coursework designed around progression in healthcare profession Provision of case management, help with job placement Courses in ESL, developmental education, GED, test-prep to help pass a state-mandated exam to allow enrollment in community college courses Training provided on flexible basis and on weekends	Capital IDEA (nonprofit) provides support services, and Austin Community College provides training	70% of enrollees took pre-requisite course for healthcare training 37% of enrollees also entered an advanced healthcare program at local community college 20% of the study population and 52% of students who began advanced healthcare training graduated from the training program Students completed a variety of healthcare training, with the largest number completing training to become RNs	In year prior to program enrollment, program graduates had median earnings of $12,952; in the first full year after graduation, same individuals had median earnings of $44,222

Career Pathways Program	Employment Target	Participant Characteristics	Training Program Features	Collaboration Relationships	Employment /Training Outcomes	Earnings Outcomes
Illinois' Shifting Gears Bridge Programs	Healthcare, manufacturing, and transportation, distribution, and logistics	Majority of students were female, members of racial and ethnic minority groups, and did not have a high school diploma or GED	Contextualized instruction Transition services to navigate the process of moving from adult education or remedial course work to credit or occupational programs. Career development supports	Programs are implemented by community colleges, often through internal collaboration across several departments Community colleges in all but one site provided both bridge program instruction and support services An employer provided the bridge program instruction and support services at the Oakton Community College site	47% of all students completed bridge programs 72% of students enrolled in developmental education bridge programs completed the programs 42% of students enrolled in adult education bridge programs completed the programs	Not indicated
Breaking Through	Not indicated	High school drop-outs, individuals with GEDs or high school diplomas but who have reading, writing, and/or math skills below the 8th grade level	Accelerated and contextualized learning Comprehensive academic, economic and social supports Employer engagement	Programs are implemented by community colleges Community colleges may work with an array of support services providers Breaking Through itself is a collaboration between Jobs for the Future and the National Council for Workforce Education	Students made gains in reading and math during the nine month study period Retention in training for Breaking Through students was higher than historical rates of completion for community college students At some sites, Breaking Through students completed training at faster rates than individuals in a comparison group	Not indicated; study occurred over a nine-month academic year

Career Pathways Program	Employment Target	Participant Characteristics	Training Program Features	Collaboration Relationships	Employment /Training Outcomes	Earnings Outcomes
Impact Studies						
Developmental summer bridge programs in Texas	None		Accelerated developmental education instruction in math, reading, and/or writing Some degree of contextualization and active learning Academic supports College readiness instruction including student development courses or student mentoring Financial incentives for program enrollment and completion	The programs were implemented by eight colleges (two open admissions four-year colleges and six community colleges)	The programs had no effect on the average number of credits attempted or earned The programs had an impact on course completion in the first college-level course in math and writing There was no evidence that the programs affected persistence	Not indicated

Career Pathways Program	Employment Target	Participant Characteristics	Training Program Features	Collaboration Relationships	Employment /Training Outcomes	Earnings Outcomes
Sectoral Employment Impact Study	Varied for three sites in the study; study sites targeted jobs in: information technology, healthcare, manufacturing and construction	Disadvantaged individuals, including current or former TANF recipients, individuals who had been convicted of crimes and/or were incarcerated	Programs provided a range of support services All study sites provided job placement assistance and post-placement support Two sites provided case management; the other site provided "career mentoring" One site provided remedial education, and one site provided ESL/basic skills tutoring	The three sites in the study were run by: Wisconsin Regional Training Partnership, a collaboration among employers, unions, and training organizations; JVS Boston, a social service agency that offers a range of services for disadvantaged workers and runs a WIA-funded One Stop; and Per Scholas, a nonprofit with connections to the business community and CBOs	Individuals in programs in the study were employed an average of 1.3 months more than individuals in the control group Program participants were more likely to work in jobs that offered benefits Most gains occurred in the second year after random assignment	Program participants earned about $4,500 more than control group members over a two-year period Program participants were more likely to work in jobs with higher wages
Year Up	Information technology and investment operations	Low-income urban youth ages 18-24	Six months of vocational skills training Instruction in "professional skills" Stipend Case management and counseling Assistance accessing social supports outside of the program Six months of internships with partnering employers Job search assistance	Nonprofit with partnerships with employers that provide internships and program guidance		Mean annual earnings for Year Up participants was 30% higher than earnings for individuals in the treatment group Program participants earned an average of $2.26 more per hour than individuals in the control group Program participants and individuals in the treatment group worked similar numbers of hours

Career Pathways Program	Employment Target	Participant Characteristics	Training Program Features	Collaboration Relationships	Employment /Training Outcomes	Earnings Outcomes
Employment, Retention and Advancement Project (ERA)	Varied at the 12 sites included in the study	Current and former welfare recipients, both employed and unemployed	Supports varied at the 12 sites, but included: Financial work incentives, Supported employment, Education referrals, Counseling on job-related issues	Programs that states and localities had developed. Many sites established partnerships between welfare agency staff and staff from community colleges, One Stop contractors, nonprofit employment service providers and/or CBOs A few programs established relationships with employers	Gains in employment, retention, advancement and wages for workers at three of the 12 sites	

Implications of the Research Literature for the HPOG National Implementation Evaluation

The research literature on career pathways program design, implementation, systems and outcomes has important implications for the HPOG National Implementation Evaluation design. In this final section we outline how the research findings can inform the design. The section is organized by the three domains of the evaluation: implementation, systems and outcomes.

Descriptive Implementation Analysis

The research literature on career pathways programs is particularly rich in descriptive analyses of the overall career pathways framework, specific program design and implementation choices around the framework, and hypotheses from the field about effective practices. There is relatively wide consensus in the literature about the core components and principles of the career pathways framework: design and operate programs in collaboration with other key stakeholders and providers; engage employers in program design, vocational training, and competency specification; focus on serving economically and educationally disadvantaged target populations; provide training that is designed both to be accessible to working adults and to expedite credentialing by implementing a set of curricular strategies; and provide comprehensive support services.

The consensus about the essential elements of a career pathways program will enhance the ability of the HPOG National Implementation Evaluation to target key program components and implementation strategies for description. Moreover, the literature offers some guidance in creating measures of a program's fidelity to career pathways *principles*. On the other hand, however, the diversity of approaches described within the career pathways framework may confound attempts to assess the relative fidelity of programs to any specific CP *model*. It is probably more likely that the implementation analysis will focus both on the enumeration and description of each program's inclusion of CP program components (e.g., contextual instruction, type of employer involvement, supports) rather than on the assessment of a program's fidelity to a specific CP model (e.g., I-BEST).

Systems Analysis

The research literature on career pathways programs stresses the importance of systems and systems change for a successful career pathways strategy.[14] The salience of systems in the career pathways literature has several dimensions: the CP framework implies changes in the ways in which developmental education and vocational training are structured; the career pathways approach requires coordination and cooperation across systems, such as employers, workforce development agencies, post-secondary educational institutions, and social services organizations; the employer community needs to become more pro-active in developing the human capital required to fill positions within industries; post-secondary educational institutions need to attend to the special

[14] While the HPOG National Implementation Evaluation will examine the influence of individual programs on systems, there is some literature on the importance of systems change to the successful adoption and implementation of career pathways programs. See a recent summary report on the Joyce Foundation's Shifting Gears program: Roberts and Price (2012).

academic and non-academic needs of the target populations for career pathways; and workforce development agencies need to coordinate and integrate services that reach across systems.

What is not clear in the career pathways literature is the degree to which the systems changes that occur within the confines of a particular career pathways program's orbit can effect more widespread changes in systems that extend beyond the narrow program context. In addition to observing and measuring systems' interactions and changes that happen within and around the HPOG grantee programs, the HPOG National Implementation Evaluation offers an opportunity to explore whether such wider and more fundamental systems changes occur.

Designing Outcomes Studies

The outcomes study of the HPOG National Implementation Evaluation design will analyze the relationship of program outputs and outcomes to program design and implementation strategies. The success of the outcomes analysis relies in part on natural variation in outcomes, participant characteristics, program designs and implementation strategies across HPOG grantees. The literature review of career pathways research presents a number of important technical challenges that must be faced in the specification and interpretation of the statistical model or models needed to explore those relationships. These challenges include:

- *Need to collect detailed descriptions of program features*. As indicated in the literature, there is no specific career pathways model, but rather a common framework of general principles and curricular strategies. When classifying apparently common features of HPOG programs for the outcomes analysis, care must be taken to ensure that program components and structures identified as similar by program operators are in fact the same. Although our site visits to 13 HPOG programs gave us some confidence that the HPOG grant application guidelines helped establish a relatively common set of program concepts, the site visits and this literature review strongly suggest that the implementation component of the national evaluation should assess the comparability of program features across grantees.[15]
- *Large dropout rates.* Even in well-implemented programs that enroll relatively well-prepared individuals from among the target population (for example, the Carreras en Salud program) non-completion rates for career pathways programs can be quite high. Unless there is meaningful variation in the success rates of participants across HPOG grantees, it may be difficult to identify successful program strategies for training retention and completion.
- *Large variations in course completion times*. Among career pathways program completers there may be large variations in the length of time needed to finish training. The variation in timing is due partly to individuals' choices among training goals, from entry-level jobs to those higher up the career ladder, and partly to the practical and financial difficulties faced by the target population in investing significant time in training. The variation in timing should be considered when thinking about follow-up periods needed to measure program outputs and outcomes.
- *Variations in program selection processes.* A potentially important problem when interpreting results of the statistical analysis is the variation in the selection and intake processes used by

[15] See Dun Rappaport, Lewis, and Werner (2011). For the HPOG grant announcement, see http://www.acf.hhs.gov/grants/open/foa/view/HHS-2010-ACF-OFA-FX-0126.

career pathways programs. Because many programs try to select participants who will be most successful, it may be difficult to interpret outcomes as the result of program components and implementation strategies as opposed to program selection processes.

- *Variations in organizational contexts.* CP programs are being implemented in various settings and forming partnerships and networks among various institutions. These partnerships and networks, as well as the organizational culture of the lead agency are important implementation factors that should be included as independent variables in the outcomes study.

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