Risk Factors for College Success:

Insights from Adults in Nine Career Pathways Programs[i]

David Fein, Abt Associates
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With career pathways programs for low-income adults rapidly expanding, little is known about the populations they serve. This brief analyzes characteristics and outcomes for adults in a sample of nine promising programs under study in the random assignment Pathways for Advancing Careers and Education (PACE) evaluation. Reflecting different logic models and policy environments, the nine samples show significant differences on a series of baseline educational, economic, demographic, and psycho-social factors. The paper analyzes the relationship between these factors and college enrollment and persistence 18 months later for a pooled sub-sample of 3,719 adults in the evaluation's randomly assigned control group. This group's experiences illuminate risk factors in the absence of program services and thereby help to assess service needs. The findings show strong relationships between college success and past educational experiences, economic status, and expected work hours. Initial psycho-social attributes such as stress, academic discipline, and commitment to training also predict college outcomes, albeit less consistently. The paper describes services the nine PACE programs provide to address the diverse influences facing their participants.

With millions of adults lacking post-secondary credentials needed for well-paying jobs, and projected labor shortages in critical occupations, improving career pathways has become an urgent matter for public policy. Recent years have brought a surge in innovative job training programs for low-income adults. These programs target different segments of the low-income adult population, focus on different occupations, and embody varied strategies for instruction and student supports. To date, there has been little study of the distribution and implications of risk factors for college success across diverse target populations.

This brief provides a statistical portrait of low-income adults recruited by nine promising programs participating in a major study—the Pathways for Advancing Careers and Education (PACE) evaluation. The PACE evaluation, conducted by Abt Associates with funding from the Office of Planning, Research and Evaluation within the U.S. Department of Health and Human Services' Administration for Children and Families, is studying each program's implementation and—based on rigorous randomized controlled trial design—impacts on education, employment, and other outcomes.[ii] Early impact findings for each program will be published beginning in 2016. This brief sets the stage for these reports by examining characteristics and outcomes in the absence of PACE program services.

The first section provides background on the PACE programs and data used in this brief. The main findings appear in two following sections—one focusing on characteristics of the nine program target populations at recruitment and a second on the relationship between these characteristics and subsequent college outcomes for participants randomly assigned to control groups in PACE. The control groups afford a valuable opportunity to look at the role of potential risk factors in the absence of services from PACE programs—and thereby to assess the premise that program services should address such factors.

The brief's findings can help address questions such as: what are the risk factors for college enrollment and persistence in a diverse population of low-income adults? What do such factors imply about student needs and intervention strategies? A concluding section discusses implications for program services.

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PACE
Pathways for Advancing Careers and Education

Background

Projected declines in high school graduates and increased demographic and economic diversity in the U.S. population focus attention on the challenge of increasing college access and success among populations which have lagged on these measures in the past. Research and experience suggest many ways college and community-based programs might better support students who are older, more racially-ethnically diverse, lower-income, and weaker in foundational skills than traditional students.[iii]

The PACE evaluation is testing an array of new approaches to serving diverse, low-income adult students though nine promising and innovative programs. The programs target different subpopulations and use varied service models. They share certain assumptions and goals embodied in an overarching framework known as career pathways.[iv]

The Career Pathways Framework

The core principle in career pathways is that post-secondary education and training should be built on portable, stackable sub-baccalaureate credentials linked to middle-skilled jobs and laddering to more advanced credentials and jobs. Steps are structured to maximize student access at different skill levels and to facilitate exits to employment and subsequent returns to school. Education and training in each pathway closely links with work—by involving employers in program design and instruction and by infusing studies with work-relevant content. Programs address special challenges for low-income adults and youth through more engaging instructional approaches, contextualized basic skills education, teaching life skills in addition to academic and technical skills, offering more guidance and peer support, and providing financial and non-financial assistance.

Though not representative of all programs operating in this framework, the nine PACE programs reflect wide variation in geography, organizational auspices, services approaches and target populations (Exhibit 1). Four programs operate at community colleges, with the remainder run by community-based and non-profit organizations. Five programs provide their own customized instruction, while others focus on career navigation and supportive services. The nine interventions vary in their targeted populations' levels of skills, income, and other criteria.

Analyses in This Brief

This brief looks at the individuals each PACE program recruited for the study ("recruits")—their educational and economic backgrounds, demographic characteristics, life stresses, and psycho-social resources. It also examines the relationship between these characteristics and college access and success for the pooled sample of recruits randomly assigned to control groups across programs. As mentioned in the introduction, analyzing risk factors in the absence of customized services from PACE programs helps to shed light on the validity of assumptions programs make in targeting and service strategies.

The analyses draw on two principal data sources. One is extensive information collected through questionnaires each recruit completed at "baseline"—that is, just prior to random assignment and before entering the program. The forms covered basic demographic, educational, and economic background characteristics, as well as an ample set of individual and multi-item indices of psychological attributes. The research team selected the latter based on an extensive review of existing measures, revised and supplemented with original items as needed. Descriptive analyses (in Exhibits 2 through 4) are based on the full sample of PACE recruits (n=9,258).

The second set of analyses document relationships between these baseline characteristics and college entry and success measures for control group members over an 18-month period following random assignment. Measures of college outcomes are based on college enrollment and credential records amassed in the National Student Clearinghouse (NSC). The NSC data cover the vast majority of institutions of higher learning participating in the federal Title IV financial aid program nationwide.[v] The sample for these analyses includes 3,719 control group members with at least 18 months of observable follow-up as of November 2015. The brief bases persistence

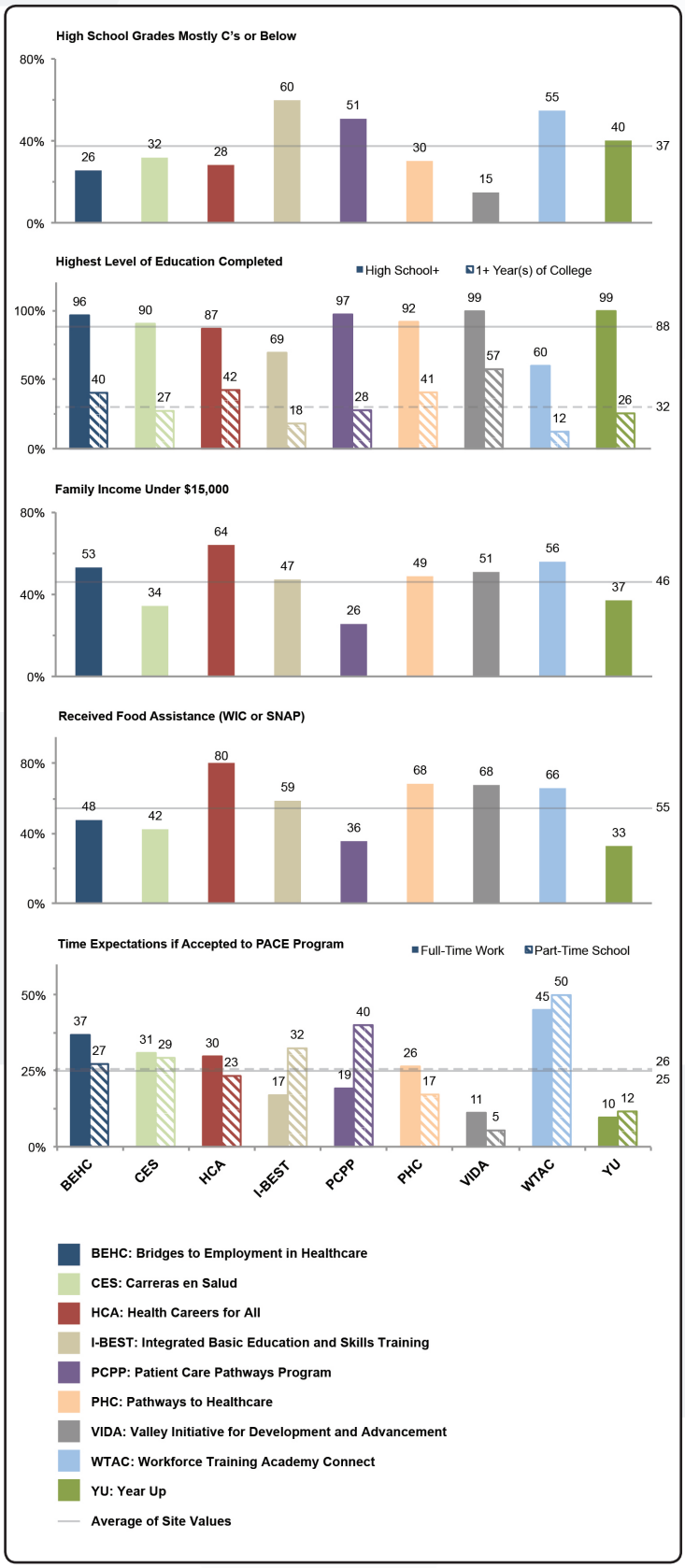
Exhibit 1: Main Features of the Nine PACE Programs

Program	Thumbnail Sketch	Target Population	Career Ladder Steps (a), Service Duration	PACE Sample Size (b)
Bridge to Employment in Health Care (San Diego Workforce Partnership)	Community-based navigators support training of low-income adults or TANF recipients in varied health care occupations. Individual training accounts (ITAs) help participants pay for training; navigators provide supports.	Individuals in San Diego County with income below 200% of the federal poverty line or receiving TANF and who have a high school diploma/equivalent.	Steps III-V, duration open-ended.	1,007
Carreras en Salud (Instituto del Progresso Latino, Chicago)	Health care ladder offering opportunities ranging from low-level bridge programs to associates- and bachelor's-level nursing degrees.	Low-income Latino adults in Chicago with academic skills ranging from the 6th to 11th grade levels.	Steps I-IV, duration open-ended.	800
Health Careers for All (Workforce Development Council of Seattle-King County)	Community-based navigators support training in several health career pathways for low-income adults or TANF recipients. Individuals receive ITAs for training or enroll in specified community college cohort programs.	Adults with income below 175% of the federal poverty line or receiving TANF, as well as some higher-income/skill individuals with other barriers.	Steps II-IV, duration open-ended	654
Integrated Basic Education and Skills Training (I-BEST, Three Washington State Community Colleges)	Statewide community college program providing credit-bearing coursework in varied occupations concurrent with basic skills or ESL instruction, as well as enhanced guidance and other supports.	Adults not meeting specified skill levels on placement tests for entry to occupational programs of interest.	Steps I-IV, duration varies. (State model stresses completion of a year of full-time coursework.)	632
Pathways to Healthcare (Pima Community College, Tucson)	Navigation and supports (financial/academic/social) in 16 different healthcare occupations within five general pathways. Low-skilled individuals start in college readiness program.	Low-income adults in Pima County below 70% of federal poverty line.	Steps II-IV, duration open-ended.	1,220
Patient Care Pathways Program (Madison Area Technical College, Wisconsin)	Two college bridge programs—one laddering to one-year, and the other to two-year, health care credentials.	Individuals testing below program entry requirements on COMPASS.	Steps II-IV, each program (PCA1 or PCA2) is one semester if taken alone, two if taken consecutively.	500
Valley Initiative for Development and Advancement (VIDA, Southeast Texas)	Intensive individual and group advising and supports for full-time college enrollment to complete 1- and 2-year credentials. Pre-college skill-level students enroll in College Prep Academy first.	Low-income adults with high school credentials, at/close to college ready.	Steps III-IV, (small fraction starts at II), duration open-ended.	959
Workforce Training Academy Connect (Des Moines Area Community College)	Basic skills and multi-occupational trainings leading to a certificate.	Low-income and low-skill adults, typically at <9th grade skill levels, with or without high school credentials.	Steps I-II, duration open-ended.	943
Year Up (Eight urban areas)	One-year, full-time program providing customized skills training and corporate internships.	Economically disadvantaged youth aged 18-24 with high school credentials, screened for motivation and moderate level of risk factors.	Steps III-IV, duration is one year.	2,544

(a) Career ladder levels, as depicted in Exhibit 1.1 in the PACE Evaluation Design Report (Abt Associates 2014), distinguish five major levels of training and employment: I, basic bridge programs to further training; II, sectoral bridge programs leading to semi-skilled employment; III, short-term certificate programs leading to entry-level skilled employment; IV, 1-2 year certificate-to-AA-level training leading to middle skilled jobs; and V, bachelor's and above-level training leading to high-skilled employment.

(b) Treatment and control groups combined.

Exhibit 2: Educational and Economic Characteristics at Recruitment (Full PACE Sample)



analyses on the subset of 1,827 control group members enrolling in college during the follow-up period.

Diversity in Career Pathways Program Target Populations

As mentioned, though not representative of the universe of innovative training programs, the PACE program sample captures substantial diversity in targeting approaches.

PACE Programs Recruited from Different Segments of the Disadvantaged Adult Population

Although all programs sought to engage economically-disadvantaged adults in career pathways training, programs emphasized varying educational and financial criteria in outreach and screening. For example, the Integrated Basic Education and Skills Training (I-BEST) program, Patient Care Pathways Program (PCPP) and Workforce Training Academy Connect (WTAC) focused mainly on recruiting participants at lower academic skill levels, whereas Health Careers for All (HCA), Pathways to Healthcare (PHC) and Valley Initiative for Development and Advancement (VIDA) emphasized low income individuals and public assistance recipients. As a result, the top panel of Exhibit 2 shows disproportionate educational deficits for recruits in I-BEST, PCPP and WTAC, where over half said they received mostly Cs or below in high school. Reflecting the strong correlation between skills and earnings, relatively large shares of these adults had incomes falling into the lowest (under $15,000) category and had received food assistance.

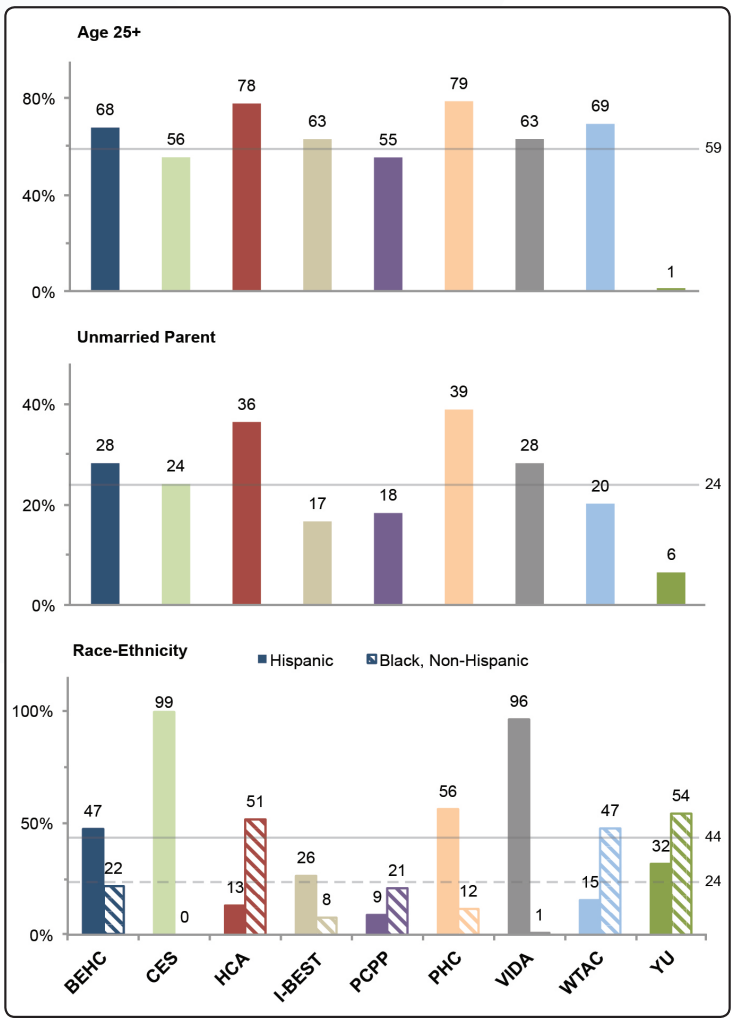
HCA, PHC and VIDA targeted low-income individuals more directly (see Exhibit 1). Though these adults were also very likely to have low incomes and receive public assistance, their educational deficits were not as large. To the contrary, college readiness was an important requirement in VIDA, and Exhibit 2 shows only 15 percent with low high school grades and more than half (57 percent) with a year or more of college credits at recruitment.

How much time a participant spends working can have a significant impact on how long it takes to complete a college program and, potentially, the likelihood of ever completing. The last panel of Exhibit 2 shows a close link between the hours recruits expected to devote to work and school. It also shows substantial variation across PACE programs. Expected work hours track with economic need, but only to a degree since some programs recruited low-income adults who were able and willing to go to school full-time.

For example, though VIDA and WTAC recruits had comparably low incomes and high welfare receipt, few of the former but many of the latter expected to work full-time (11 percent vs. 45 percent) and go to school part-time (5 percent vs. 50 percent). VIDA's emphasis on recruiting and supporting participants committed to full-time college enrollment likely explains the difference. Year Up (YU) also recruited young adults willing to commit to a full-time program.

Exhibit 3 shows variation in key demographic characteristics across PACE samples. As YU targets only 18-24 year olds, we see virtually no recruits outside this age range and few single parents (top panels of Exhibit 3). Conversely, some programs put more emphasis in targeting welfare recipients, among whom single parents are more prevalent. HCA and PHC recruits stand out in this regard. Recruits to these programs were more likely to be single parents (36 percent and 39 percent) and older (with 78 percent and 79 percent aged 25 and above, respectively) than those in other programs.

Exhibit 3: Demographic Characteristics at Recruitment (Full PACE Sample)



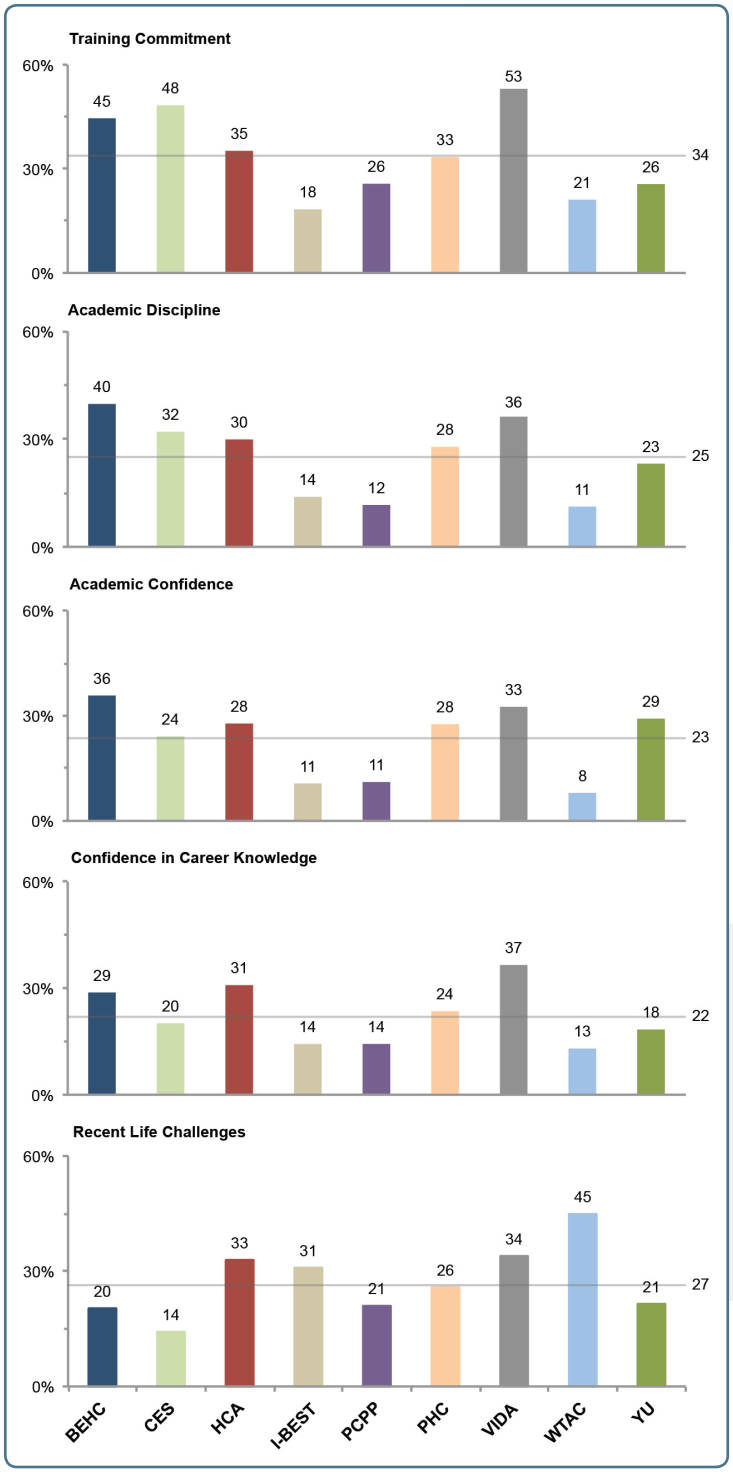
The programs target various racial and ethnic minorities—one (Carreras en Salud/CES) deliberately, and others by virtue of the geographical areas served. As a result, Hispanics represented virtually the entire sample in two sites (CES in Chicago and VIDA in southeastern Texas) and a majority in a third site (PHC in Tucson). Roughly half of recruits were African American in three programs targeting low-income adults in urban areas with large black populations (HCA, WTAC, and YU).

Psycho-social functioning and reports of life challenges also vary across the program samples. Exhibit 4 shows average values on a series of psycho-social indicators. Recruits in three programs targeting on low academic skills (I-BEST, PCPP, and WTAC) were

less likely to be in the upper quartile of recruits on measures of training commitment, academic discipline, academic confidence, and confidence in career knowledge. Similarly, recruits in sites with the lowest education and income levels were more likely to be in the upper quartile of reported life challenges interfering with school, work, or other family responsibilities.

However, the link between economic disadvantage and psycho-social attributes is imperfect, in part because some programs targeting low-income groups try to screen for relatively motivated individuals. For example, VIDA selects students from high-poverty circumstances who are nonetheless committed to attending college full-time: recruits score high on an index of recent life challenges, but also display high levels of training commitment and confidence. In contrast, YU screens out applicants with too many assessed risk factors, explaining why its recruits exhibit more moderate levels on the life challenge index.

Exhibit 4: Percent in Top Quartile on Psycho-Social Strengths and Life Challenges (Full PACE Sample)



Recruits in this Diverse Sample of Programs Faced More Disadvantages than the Typical Community College Student

The population recruited by the nine PACE programs differs in important respects from first-time students entering two-year colleges nationwide, based on data from the 2011-2012 academic year. For these national comparisons, we ran special tabulations using data from the National Postsecondary Student Aid Study (NPSAS).[vi]

Educationally and financially, the PACE sample—pooled across the nine programs—was more disadvantaged than students in the NPSAS sample. The percent of PACE recruits reporting usual high school grades of C or below (37 percent) was about double the percent with high school GPAs in this range among community college students nationally (16 percent, not

shown in exhibit). Family income was below $15,000 for nearly half (46 percent) of PACE recruits, but only 30 percent of community college students. Over half (55 percent) of PACE recruits received some form of food assistance, while only 14 and 2 percent of two-year college students received SNAP and WIC, respectively.[vii]

As noted earlier, whether students attend college part- or full-time can affect their prospects for completion. At the time of recruitment, fewer PACE sample members expected to attend school part time (26 percent) and work full time (25 percent) than were actually attending part time (51 percent) and working full time (32 percent) among first-time community college students. Even fewer PACE recruits were actually working full time at the time of recruitment into the study (15 percent). The difference in employment (and possibly lower access to parental support for older PACE recruits) likely explain much of the income gap between the two populations.

The PACE sample's demographic profile differs from that of traditional college students who enroll immediately after high school. The latter represent a larger fraction of the overall community college student population. Excluding YU, which enrolls only 18-24 year-olds, two-thirds of PACE recruits were 25 or older, compared with 46 percent of first-time enrollees in two-year schools nationally. The PACE sample included more unmarried parents (24 percent for all programs; 27 percent excluding YU) versus 18 percent nationally. Hispanics and African Americans represented 44 percent and 24 percent of the overall PACE sample compared to 19 percent and 17 percent of community college students nationally.

Another interesting comparison is to "non-traditional" college students nationally. Because substantial numbers of PACE sample members attended four, as well as two-year institutions, we included students in both types of schools nationally.[viii] We ran statistics for NPSAS sample members at any college who had three or more "non-traditional" characteristics, as defined in recent federal reports.[ix] Such students comprised 40 percent of college students in 2011-2012. The PACE population had relatively more educationally and economically disadvantaged students than the national, non-traditional student sample. PACE recruits were more likely to have high school grades of C or below (37 percent, compared to 16 percent in the national sample), incomes under $15,000 (46 percent, compared to 35 percent), or food assistance receipt (55 percent receiving SNAP or WIC in PACE, compared with 20 percent SNAP and 8 percent WIC in the national, non-traditional sample). PACE sample members were more likely to be Hispanic (44 percent versus 16 percent) or African American (24 percent versus 22 percent).

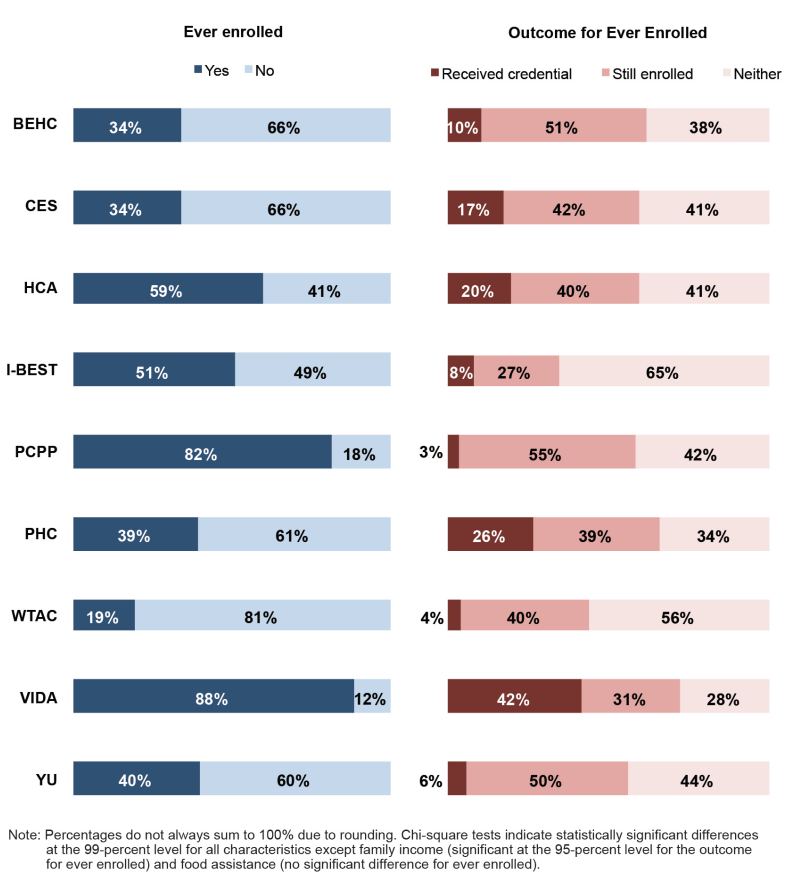
On the other hand, compared to non-traditional students nationally, PACE recruits had lower fractions who were aged 25 years or older (66 percent, excluding Year Up, versus 77 percent); single parents (27 percent, excluding Year Up, versus 39 percent), and working full-time while in school (25 percent expecting to work full time versus 50 percent nationally who did so). Such differences are not surprising, since these characteristics are among criteria used to identify non-traditional students in the NPSAS.

In sum, programs in the PACE study recruited a sample of adults who were more educationally and economically disadvantaged, and included more racial-ethnic minorities, than either first-time students at community colleges or students with three or more "non-traditional" characteristics at any (two- or four-year) college. The PACE sample was somewhat less likely to expect to work full-time than either national sample and somewhat older and more likely to be single parents than the typical community college student.

Factors Related to College Success

As mentioned in the introduction, the availability of randomly assigned control groups affords a unique look at outcomes for recruits when they do not receive services from the programs participating in the PACE evaluation. Such outcomes establish the bar programs must exceed in order to be effective, and help gauge the role of potential risk factors for college success in the absence of these interventions.

Exhibit 5: College Outcomes for PACE Control Group Members 18 Months After Recruitment By PACE Program



Note: Percentages do not always sum to 100% due to rounding. Chi-square tests indicate statistically significant differences at the 99-percent level for all characteristics except family income (significant at the 95-percent level for the outcome for ever enrolled) and food assistance (no significant difference for ever enrolled).

Absent PACE Programs, College Outcomes Vary Across the Nine Samples and Are Poorer Overall than for the Average Community College Student

Adults in the PACE sample who enrolled in college at any time within 18 months of recruitment varied widely in college readiness and engagement (left-side panel Exhibit 5). At the high end, more than four in five PCPP and VIDA control group members enrolled in college. At the low end, only one in five WTAC control recruits enrolled.

Among control group members enrolling in college, a good marker of progress is the proportion that either received a credential (certificate or degree) or was still enrolled in college 18 months after recruitment. This proportion ranged from 73 percent for VIDA to 35 percent for I-BEST (right-side panel Exhibit 5). The fraction of control group college enrollees earning college credentials was 42 percent for VIDA recruits and 8 percent for I-BEST recruits.

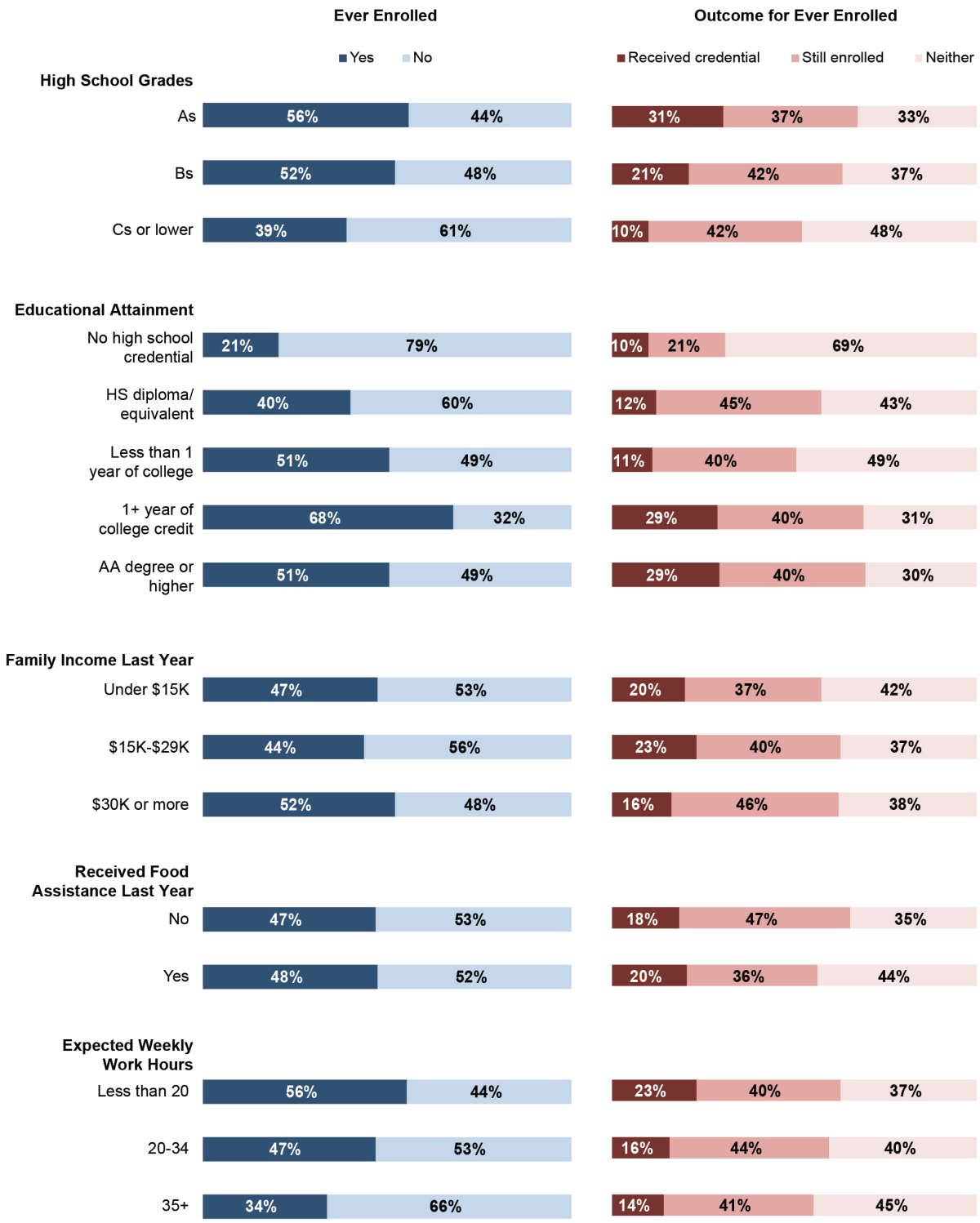
Prior Educational Experiences Are Strongly Related to College Enrollment and Success

High school grades capture multiple influences on academic performance and are a powerful predictor of post-secondary success—even when self-reported. Exhibit 6 shows that for the pooled sample of control group members for all nine PACE programs, recruits reporting better high school grades were more likely to enroll in college during the 18-month observation window (left-side panel). After enrollment, better high school grades strongly predict persistence and credential receipt (right-side panel).

Not surprisingly, recruits with higher levels of school attainment at recruitment also were more likely to enroll in and complete college over the 18-month observation period. As seen in the second panel of Exhibit 6, rates of college enrollment rise with successive increments in baseline educational attainment, dropping somewhat for recruits who already had a college degree at entry to PACE.

After enrolling, persistence also generally rises with prior educational attainment. Recruits with less than a year of college credit are an exception: after 18 months, they are less likely than those with only a high school credential to persist. This group's relatively poor outcomes are even more apparent after controlling for a wide range of factors in supplemental multivariate analyses.[x] Such findings suggest that short stints of prior college may be

Exhibit 6: College Outcomes for PACE Control Group Members 18 Months After Recruitment By Educational and Economic Characteristics



Note: Percentages do not always sum to 100% due to rounding. Chi-square tests indicate statistically significant differences at the 99-percent level for all characteristics except family income (significant at the 95-percent level for both outcomes) and food assistance (no significant difference for ever enrolled).

an indicator of unobserved challenges affecting college persistence.

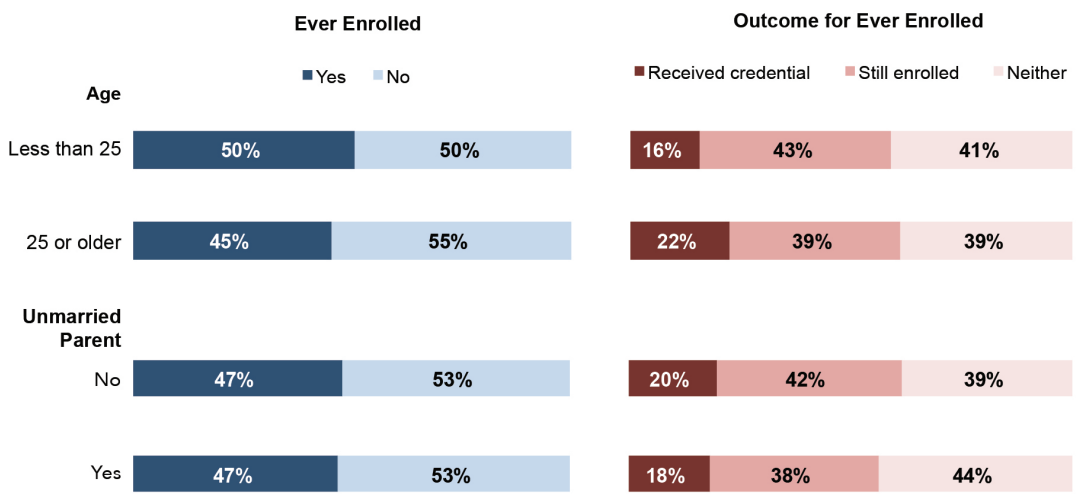
Time Is at Least as Influential as Money When It Comes to College Success

Although low-income adults generally face greater challenges in affording college, differences in college enrollment and persistence (received credential or still enrolled) are not as pronounced for family income as for other factors in the PACE control group sample (see Exhibit 6). Multivariate analyses similarly show no consistent relationship between income and enrollment; however, persistence is a statistically significant five percentage points lower in the bottom income group compared to other categories.

One reason income differences are not larger may be that higher income signals additional constraints as well as supports for college. For example, although higher income from earnings can help to pay for college, more hours spent working leave less time and energy for school. Control group members who expected to work more hours in school were substantially less likely to subsequently enroll in college and, when they did enroll, to earn credentials (Exhibit 6). Relatedly, those who expected to attend school part-time at the outset also had substantially lower rates of college enrollment and persistence (not shown).

Public assistance receipt has little apparent influence on college enrollment in the PACE sample, but is negatively related to persistence after enrollment. Exhibit 6 shows sample members who had received food assistance were less likely than those who had not to still be enrolled in college 18 months after recruitment. A similar pattern emerged when we controlled for other baseline characteristics: namely, a sharply lower fraction receiving credentials or still enrolled among food assistance recipients. Similar multivariate analyses reveal even larger gaps in credential receipt among those receiving TANF.[xi] The findings could imply that unobserved characteristics of recipients or more intrinsic aspects of assistance receipt curtail persistence. One possible intrinsic mechanism could be emphases on full-time work and limits on support for education and training in welfare policies that reduce the time participants are able to devote to college studies.

Exhibit 7: College Outcomes for PACE Control Group Members 18 Months After Recruitment By Select Demographic Characteristics



Note: Percentages do not always sum to 100% due to rounding. Chi-square tests indicate statistically significant differences for age at the 99-percent level (both outcomes). Differences were not statistically significant for unmarried parent (either outcome).

Implications of Demographic Characteristics Defining "Non-Traditional" College Students Vary

Efforts to strengthen career pathways for low-income adults must address the particular needs of students beyond traditional college ages who have greater family responsibilities. In the PACE control group sample, adults aged 25 and older were less likely to enroll in college, but more likely to earn credentials when they did, compared with younger adults (Exhibit 7).

Simple statistics hint at reduced college persistence in another non-traditional group—unmarried parents—but the differences are not statistically significant. After controlling for income and other factors associated with single parenting, however, we find a five-to-seven percentage point disadvantage in credential receipt.[xii] The finding suggests greater challenges for unmarried parents in completing college, perhaps due to the greater difficulty of juggling school and childrearing responsibilities without help from a spouse.

Psycho-Social Attributes Predicting College Success Include Academic Discipline, Commitment, and Confidence

Findings in Exhibit 8 support a growing literature on the importance of psychological characteristics associated with persistence—variously labeled "conscientiousness," "determination," "discipline," "commitment" and "grit."[xiii] Sample members who reported higher levels of academic discipline (maintaining focus on tasks) and commitment (motivation to complete training) at the outset were more likely to enroll in college and earn credentials within 18 months of enrollment than those with lower scores on these indices.

Two indices of confidence in learning ability—one capturing general academic skills and the other addressing career knowledge—also predicted enrollment and credential receipt. As seen in Exhibit 8, for both indices, the bump in credential receipt is sharpest for recruits in the upper quartile on these indicators, suggesting a relatively high level of confidence as measured by these indices is needed to sustain persistence.

The importance of academic discipline (enrollment) and commitment (persistence) was maintained after controlling for a large number of factors in multivariate analyses (not shown). In contrast, differences by academic confidence disappeared—perhaps because, as other studies have found, confidence is rooted in actual academic abilities driving educational outcomes.[xiv]

The Personal and Family Challenges that Interfere with College Success Are Difficult to Identify at the Outset

The analysis assessed two measures of life challenges: an index of recent challenges interfering with work, school, or family and an index of perceived stress (not shown). The former showed little relationship to college enrollment or persistence, even after analyzing specific challenges in the index (e.g., child care, transportation, substance abuse, domestic disharmony and violence). Higher levels of perceived stress decreased the likelihood of enrollment (even after controlling for other factors), but were not related to persistence. The findings suggest that the circumstances under which life challenges and stresses affect outcomes are more nuanced than these analyses and data were able to capture.

Conclusions

The career pathways programs participating in the PACE project targeted and recruited different segments of the large national population of disadvantaged adults. Recruits differed on characteristics programs directly targeted (e.g., education, income, age, race-ethnicity, and willingness to commit to full-time school), as well as on less readily-observed characteristics (e.g., perceived stress, recent life challenges, training commitment and discipline, academic confidence, and confidence in career knowledge).

Widely-varying college outcomes for control group members across programs show that these recruitment emphases were consequential. At one end, only 19 percent of WTAC recruits enrolled in college, few enrollees earned credentials, and most

dropped out within 18 months of recruitment. At the other end, fully 88 percent of the VIDA sample enrolled in college, 42 percent earned credentials, and only 28 percent dropped out.

Analyzing statistical associations between baseline characteristics and subsequent college outcomes helps to understand potential sources of variation in outcomes across programs. Looking at these associations for control group members is useful in tracing the role of various factors when services customized for them are not provided. Such analyses can help to test the premises underlying initial program targeting decisions, as well as assumptions about services needed to address varying risk factors.

Some programs focused on addressing **weak academic preparation** and weaknesses in English language, literacy, and numeracy skills—and related deficits in academic confidence. Absent effective responses to these issues, findings show past educational deficiencies (e.g., reflected in high school grades and limited post-secondary attainment) to be strong negative predictors of college success. PACE programs taking the most direct approach to basic skills combined accelerated and/or contextualized ESL, English, and math remediation with occupational training in integrated or closely aligned courses. CES, I-BEST, PCPP, WTAC, and YU provided various forms of integrated instruction, as well as enhanced tutoring and advising services. These programs provided training to students in small "learning communities" to foster social support and belonging and help build academic confidence.

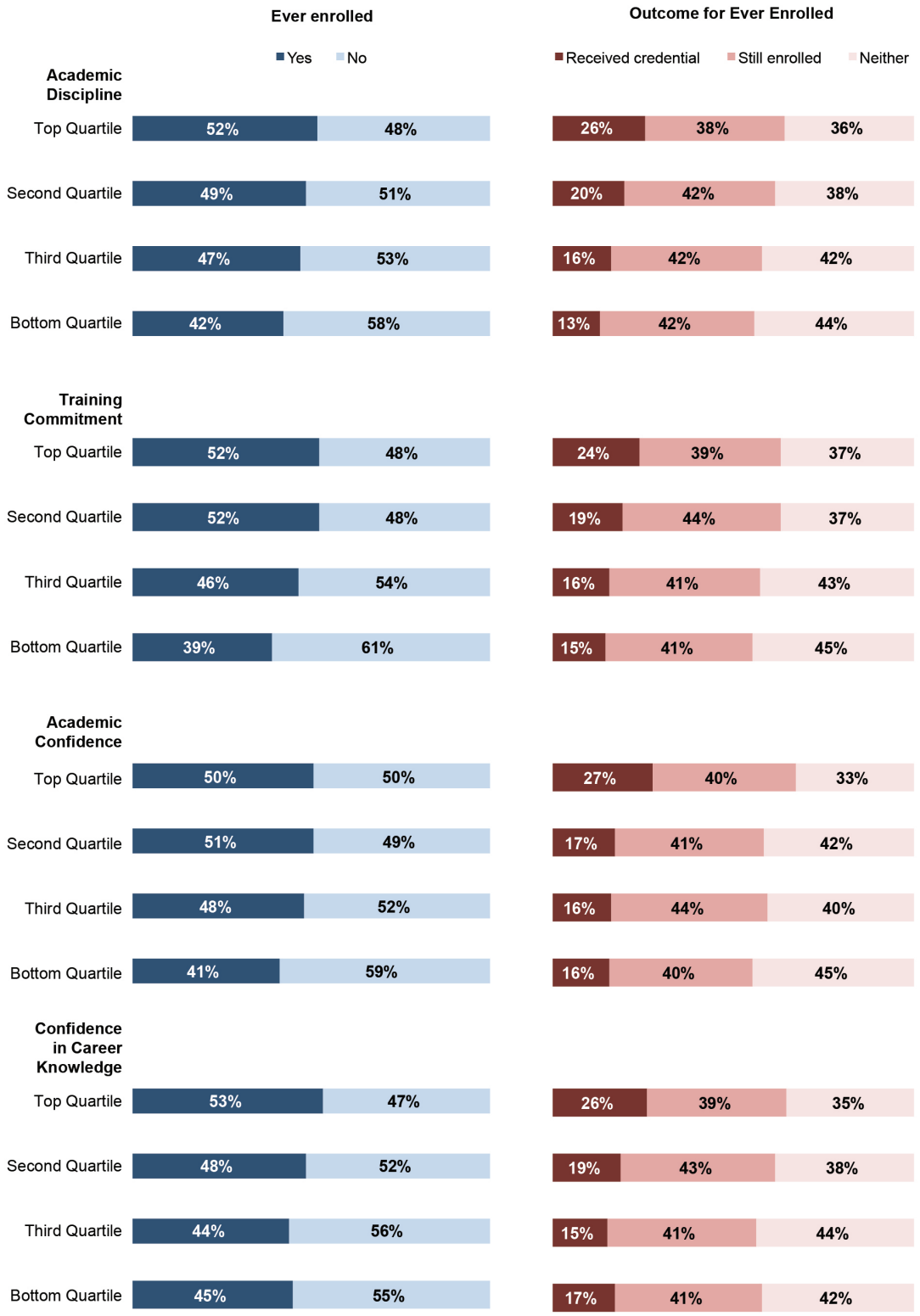
Poverty is linked to a host of **challenging circumstances** that can interfere with college success. Our finding of minimal effects of recent life challenges on college outcomes suggests that the challenges affecting performance are complex and difficult to infer from interviews at intake. Thus, although upfront assessment can provide a good start for service plans, it is equally or more important to anticipate hidden barriers and monitor emerging risks. Most PACE programs did conduct ongoing monitoring and offer counseling and case management services at enhanced levels compared with traditional student services.

Similarly, although students must have sufficient financial resources to cover school and living expenses, family income over the prior year was more weakly associated with college outcomes than many characteristics. In contrast, expected work hours, expected part-time school attendance, and welfare receipt variously had strong negative associations with college enrollment and receipt. Findings for the first two predictors underscore the critical role of **time as a resource in college success**. Strong negative associations of SNAP and TANF participation with college persistence—even after controlling for income and other resource measures—also may hint at time constraints, given the emphasis on work and limits on support for training in food and cash assistance policies.[xv]

PACE programs provided a variety of **financial and in-kind supports** to help students put quality time into school. Two – VIDA and YU – were full-time programs and recruit participants who were willing and able, with additional financial supports, to attend school full time. Many of the other programs provided financial assistance to cover school costs and, to a lesser degree, living expenses. For example, three programs – BEH, HCA, PTH – provided financial assistance through the Health Profession Opportunity Grants and federal programs such as the Workforce Investment Act.[xvi] Other PACE sites tapped other sources of state, local, and philanthropic funding to provide financial assistance (e.g., state Opportunity Grants in I-BEST). The programs also provided a range of free support services (e.g., some offer child care and transportation), as well as referrals to other free and low-cost services in the community. In varying degrees and ways, PACE programs also aimed to instill life skills critical in managing one's time, family responsibilities, and finances. For example, WTAC provided a two-session "tools" course on these skills.

Finally, the findings affirm an important role for **psycho-social factors**—especially determination and confidence—in college success. Scholars increasingly see these more as malleable attributes and less as fixed personality traits, while acknowledging the need for improved definitions and measures.[xvii] In combination with improved instruction and material supports, some educational psychologists believe that modest psycho-social skills interventions may have strong recursive

Exhibit 8: College Outcomes for PACE Control Group Members 18 Months After Recruitment By Select Psycho-Social Characteristics



Note: Percentages do not always sum to 100% due to rounding. Chi-square tests indicate statistically significant differences at the 99-percent level for all characteristics (both outcomes).

effects as success in college helps to boost positive mind sets.[xviii] Practitioners are implementing a variety of strategies to bolster psycho-social resources. Some PACE programs – VIDA and YU, for example – focused recruitment on low-income applicants with relatively high motivation, but other significant needs affecting confidence and determination. Several (PTH, WTAC, YU) provided formal instruction in psycho-social skills. Nearly all of the nine programs provided enhanced counseling, guidance, and social supports intended to bolster self-awareness, commitment, study discipline, and self-confidence.

A new generation of programs – highlighted in the PACE sample – is striving to address the wide range of influences examined in this brief. We will know soon if they are on the right track. The next phase of the PACE evaluation will compare outcomes for randomly assigned treatment and control groups at 15- and 36-month follow-up intervals. The project will assess the degree to which each program effectively addressed important influences on college success among the economically disadvantaged adults they targeted.

More on the Data and Analyses

This brief draws on two principal data sources: forms PACE recruits completed just prior to random assignment and college records of enrollments and credentials over the following 18 months. Baseline forms covered an extensive array of education, employment, demographic, psycho-social, and other life experiences. Multi-item indices for training commitment, academic discipline, and academic confidence are based on measures from the ACT Inc. Student Readiness Inventory, with minor revisions on advice from ACT researchers. Indices for confidence in career knowledge and recent life challenges include items from a variety of existing scales. For more on the sources of PACE baseline measures, see http://www.acf.hhs.gov/programs/opre/resource/pathways-for-advancing-careers-and-education-supplement-evaluation-design-impact-analysis-plan.

The source for college records is the National Student Clearinghouse (NSC), a data warehouse covering over 96 percent of enrollments at institutions for higher education participating in federal Title IV financial aid programs in 2013-2014. For more information, see http://www.studentclearinghouse.org/. For this brief, NSC staff provided enrollment and completion records based on a November 2015 match for the full PACE sample of 9,258 recruits.

Analyses of baseline characteristics by program in Exhibits 2-4 are based on the full sample of 9,258 recruits, including treatment and control group members. Analyses of college outcomes in Exhibits 5-8 are restricted to 3,719 control group members for whom at least 18 months of follow-up was available as of the November 2015 NSC match. For the latter group, we looked at percentages with any enrollment within 18 months of random assignment. For the 1,827 with some enrollment, to measure completion and persistence, we looked at percentages who received a credential within the 18-month window or, if not, who were still enrolled at the end of the period.

Exhibits 5-8 provide simple enrollment and persistence percentages for subgroups defined by each baseline characteristic. To test the degree to which differences in college outcomes may arise from correlations with other factors rather than properties of the characteristics, we conducted a series of multivariate regression analyses. These analyses estimated models including the full set of program identifiers and baseline characteristics, using ordinary least squares to estimate models for enrollment, credential receipt, and persistence. In the interest of brevity and readability, the brief mentions noteworthy findings but does not present results at length. Tables summarizing the multivariate estimates are available from the author on request.

Notes

[i] To contact the author, e-mail David_Fein@AbtAssociates.com. The author thanks the following persons at Abt for contributions to this brief: David Dupree, Karen Gardiner, Daniel Kitrosser, David Judkins, Howard Rolston, Azim Shiiv, and Julie Strawn. He also thanks the following staff at ACF's Office for Planning, Research and Evaluation for their comments and support: Nicole Constance, Naomi Goldstein, and Erica Zielewski.

[ii] For more on the PACE evaluation see: http://www.career-pathways.org/acf-sponsored-studies/pace/.

[iii] For projected demographic trends, see: http://www.wiche.edu/pub/knocking-8th-and-supplements; http://nces.ed.gov/pubs2014/2014051.pdf; and https://www.census.gov/content/dam/Census/library/publications/2015/demo/p25-1143.pdf. For emerging responses see D.J. Fein (2012). Career Pathways as a Framework for Program Design and Evaluation. Abt Associates Inc: Bethesda MD. http://www.acf.hhs.gov/sites/default/files/opre/cp_as_a_framework_final_508b.pdf..

[iv] Fein (2012), *ibid*.

[v] In 2013-2014, NSC data covered 96 percent of enrollments in institutions receiving federal Title IV financial assistance nationwide. See coverage estimates at: http://nscresearchcenter.org/wp-content/uploads/NSC_COVERAGE.xlsx.

[vi] For documentation on the NPSAS and associated tabulation software, see https://nces.ed.gov/surveys/npsas/.

[vii] Whereas the PACE baseline survey included only a single question on receipt of SNAP or WIC; online tabulation package did not allow us to readily combine NPSAS items for a comparable figure.

[viii] The PACE control group's experience shows schools the study population would choose absent special interventions: of those with any college enrollment in the 18 months after random assignment, 45 percent attended at least one four-year college.

[ix] The National Center for Education web tables identify seven characteristics of non-traditional students: being independent for financial aid purposes, having one or more dependents, being a single caregiver, not having a traditional high school diploma, delaying postsecondary enrollment, attending school part time, and being employed full time. See tables at: http://nces.ed.gov/pubs2015/2015025.pdf.

[x] Results are available from the author on request. The percentage earning a credential or still in school at 18 months among sample members with some but less than a year of college at baseline was six percentage points lower than for those with no more than a high school credential, after controlling for a wide number of other baseline characteristics. See methods box for description of approach.

[xi] After controlling for many other baseline characteristics, college persistence (i.e., received credential or still enrolled) is six to nine percent lower for those receiving SNAP and TANF in the prior year, respectively, than for recruits in the control group who did not receive these benefits. See text box on methods for summary of approach to multivariate analyses.

[xii] Of those enrolling in college, the percentage receiving a credential is five to seven percentage points lower for single parents than for sample members in other family types after controlling for many other baseline variables. See text box on methods.

[xiii] See, for example: A.L. Duckworth, C. Peterson, M.D. Matthews & D.R. Kelly (2007). Grit: Perseverance and passion for long-term goals. *Journal of Personality and Social Psychology*. 92(6): 1087-1101; A.E. Poropat (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Review*. 135(2): 322-338; S.B. Robbins, J. Allen, A. Casillas, C. Hamme, H. Le (2006). Unraveling the differential effects of motivational and skills, social, and self-management measures from traditional predictors of college outcomes. *Journal of Educational Psychology*. 98(3): 598-616.

[xiv] Developers of the academic confidence index at ACT Inc. report a similar finding. See Robbins et al. (2006), *ibid*.

[xv] Although both SNAP and TANF policies include work requirements, the latter are more stringent and better studied. For example, K.M. Shaw, S. Goldrick-Rab, & J.A. Jacobs (2006). *Putting poor people to work*. New York, NY: Russell Sage Foundation document restrictions on vocational training arising from late 1990s work-oriented reforms to Temporary Assistance to Needy Families (TANF) and Workforce Investment Act (WIA) programs. Econometric evidence that these restrictions reduced college enrollment and full-time vocational training includes D.M. Dave, N.E. Reichman, & H. Corman (2008). *Effects of welfare reform on educational acquisition of young adult women* (Working Paper 1466). Cambridge, MA: National Bureau of Economic Research and D.M. Dave, N.E. Reichman, H. Corman, & D. Das (2011). Effects of welfare reform on vocational education and training. Economics of *Education Review*, 30: 1399-1415.

[xvi] On July 22, 2014, the Workforce Investment Act (WIA) was replaced by the Workforce Innovation and Opportunity Act (WIOA). WIOA (H.R. 803; Pub.L. 113–128) consolidates job training programs under WIA into a single funding stream.

[xvii] See L. Duckworth & D.S. Yeager (2015). Measurement matters: Assessing personal qualities other than cognitive ability for educational purposes. *Educational Researcher*. 44(4): 237-251; and M.R. West et al. (2015). Promise and paradox: Measuring students' non-cognitive skills and the impact of schooling. *Educational Evaluation and Policy Analysis*. Published online before print on August 20, 2015.

[xviii] D.S. Yeager & G.M. Walton (2011). Social-psychological interventions in education: they're not magic. *Review of Educational Research*. 81(2): 261-301.

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Erica Zielewski and Nicole Constance, Project Officers
Office of Planning, Research and Evaluation
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Project Director:

Karen Gardiner
Abt Associates, Inc.
4550 Montgomery Ave.
Bethesda, MD 20814