

# **The Impact of ABS Program Participation on Long-Term Postsecondary Engagement**

Stephen Reder, PhD  
Portland State University

December 2014

## Research Brief: The Impact of ABS Program Participation on Long-Term Postsecondary Engagement

---

This report was produced under U.S. Department of Education Contract No. ED-VAE-11-O-0018 with NOVA Research Company, which included a subcontract with Portland State University. Joseph Perez served as the Contracting Officer's Representative. The views expressed herein do not necessarily represent the positions or policies of the Department of Education. No official endorsement by the U.S. Department of Education of any product, commodity, service, or enterprise mentioned in this publication is intended or should be inferred. For the reader's convenience, this publication contains information about and from outside organizations, including hyperlinks and URLs. Inclusion of such information does not constitute the Department's endorsement.

### **U.S. Department of Education**

Arne Duncan

*Secretary*

### **Office of Career, Technical, and Adult Education**

Johan Uvin

*Acting Assistant Secretary*

### **Division of Adult Education and Literacy**

Cheryl Keenan

*Director*

December 2014

This report is in the public domain. Authorization to reproduce it in whole or in part is granted. While permission to reprint this publication is not necessary, the citation should be: U.S. Department of Education, Office of Career, Technical, and Adult Education, *The Impact of ABS Program Participation on Long-Term Postsecondary Engagement*, Washington, DC, 2014.

This report is available on the Department's website at:

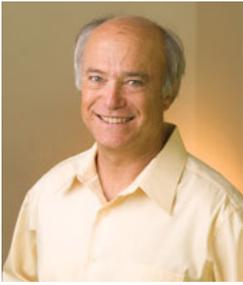
[http://lincs.ed.gov/employer/4\\_ABS\\_Postsecondary\\_Engagement.pdf](http://lincs.ed.gov/employer/4_ABS_Postsecondary_Engagement.pdf)

Availability of Alternate Formats:

Requests for documents in alternate formats such as Braille or large print should be submitted to the Alternate Format Center by calling 202-260-0852 or by contacting the 504 coordinator via email at [om\\_ecos@ed.gov](mailto:om_ecos@ed.gov).

Notice to Limited English Proficient Persons:

If you have difficulty understanding English, you may request language assistance services for Department information that is available to the public. These language assistance services are available free of charge. If you need more information about interpretation or translation services, please call 1-800-USA-LEARN (1-800-872-5327; TTY: 1-800-877-8339), or email us via the following link to our customer support team: [Ed.Language.Assistance@ed.gov](mailto:Ed.Language.Assistance@ed.gov).



Stephen Reder, PhD  
Professor, Department of Applied Linguistics  
Portland State University

### About the Author

Dr. Reder earned his PhD from Rockefeller University in 1977, and for the next nearly twenty years he conducted research in West Africa, Alaska, and the Northwest Regional Educational Laboratory. He joined the faculty of Portland State University (PSU) in 1995. His many interests include how adults learn language, literacy skills, language education, and the role of language, literacy, and technology in everyday life. He is an active member of the Literacy, Language, and Technology Research Group (LLTR) at PSU.

As part of his research activities, Professor Reder presents and publishes regularly. He co-edited a book, *Tracking Adult Literacy and Numeracy Skills: Findings from Longitudinal Research*, that was published by Routledge in 2009. His book *The State of Literacy in America* was published by the National Institute for Literacy in 1998. In that year he also co-edited *Learning Disabilities, Literacy, and Adult Education*, published by P. H. Brookes. Dr. Reder has also authored many journal articles and book chapters.

### Acknowledgment

The author wishes to acknowledge the very able econometric assistance of Dr. Anita Alves Pena of Colorado State University.



# Research Brief:

## The Impact of ABS Program Participation on Long-Term Postsecondary Engagement

### Introduction

National and international studies such as the recent Survey of Adult Skills<sup>1</sup> provide strong evidence of the need for and economic value of adult basic skills (ABS). A growing body of research indicates that there is a strong economic return on basic skills at given levels of education.<sup>2</sup> Estimates have been made of the potential economic benefits that would accrue from increased educational attainment and levels of basic skills.<sup>3</sup> There is little rigorous research, however, showing that participation in basic skills programs directly impacts the skill levels, educational attainment, or social and economic well-being of adults with low levels of education. Most research on adult literacy development looks only at short-term changes as students pass through single ABS programs. Most studies use short follow-up intervals and consider only program participants, making it difficult to see longer-term patterns of program participation and persistence and assess long-term impact of ABS program participation.<sup>4</sup>

Although ABS program evaluation and accountability reports typically show small gains for program participants in test scores and other outcomes, these studies rarely include comparison groups of nonparticipants, and most studies that do include such controls have not found statistically significant ABS program impact.<sup>5</sup> Research is needed that compares adult literacy development among program participants and nonparticipants across multiple contexts and over significant periods of time to provide a life-wide and lifelong perspective on adult literacy development and a better assessment of program impact on a range of outcome measures.

The Longitudinal Study of Adult Learning (LSAL) is one such lifelong and life-wide study. LSAL randomly sampled about 1,000 high school dropouts and followed them for nearly a decade from 1998–2007. LSAL followed both participants and nonparticipants in adult literacy programs, assessing their literacy skills and skill uses over long periods of time, along with changes in their social, educational, and economic status, offering a rich picture of adult literacy development.

This is the fourth of a series of Research Briefs that utilize LSAL data to examine long-term impacts of ABS program participation on a range of outcome measures. Each Brief looks at a different outcome. The first, second, and third Briefs consider the long-term impact of participation on individuals' earnings, literacy proficiency, and General Educational Development (GED) credential attainment,

respectively. This fourth Brief examines the impact of participation on engagement in postsecondary education. A subsequent Brief will examine the impact of participation on voting in general elections as a measure of civic engagement.

This Research Brief addresses the following research question: **What is the impact of participating in an ABS program on subsequent postsecondary engagement?**

### LSAL Design and Methodology

**The overall design, methodology, population, and instrumentation of LSAL are described in detail elsewhere,<sup>6</sup> and only essential details are summarized here.**

#### *Population and Sample*

The study population for LSAL was defined as adults who at the start of the study in 1998: lived in the Portland (Oregon) metropolitan area; were ages 18–44; had not completed high school nor were enrolled in high school or college; and were proficient but not necessarily native speakers of English. This defined population is a major segment of the target population of ABS programs operated by community colleges and other organizations in Oregon and across the country. The sample was drawn through random digit dialing, with oversampling of current participants in ABS programs to ensure adequate numbers of both program participants and nonparticipants in the sampled “panel” of 934 adults who then were followed from 1998–2007.<sup>7</sup> At study onset, the LSAL population had an average age of 28 and was evenly divided among males and females, with one-third from minority groups and one-tenth from immigrant populations. Nearly one in three reported having a learning disability.

Some of these defining characteristics of LSAL's population changed over time. Everyone's age increased, of course, while some adults received GEDs and college degrees, experienced changes in their employment and family situations, or moved away from the Portland area. LSAL followed its panel members regardless of these and other changes, with about 90 percent of the original panel retained in the study until data collection ended in 2007.<sup>8</sup>

#### *Interviews and Assessments*

LSAL conducted a series of six periodic interviews and skills assessments in respondents' homes:<sup>9</sup>

Wave 1: 1998–1999

Wave 2: 1999–2000

Wave 3: 2000–2001

Wave 4: 2002–2003

Wave 5: 2004–2005

Wave 6: 2006–2007

Note that the spacing of successive interviews was one year between Waves 1, 2, and 3 and two years between Waves 3, 4, 5, and 6.<sup>10</sup>

### Interview Content

The initial interview gathered background information (e.g., demographics, family-of-origin characteristics, K–12 school history). The initial and each successive interview collected information about recent social, economic, and educational activities (e.g., participation in basic skill programs; postsecondary education and training; employment, job characteristics, and earnings; household and family composition; life goals and aspirations).<sup>11</sup>

### Engagement in Postsecondary Education

LSAL asked questions about postsecondary education starting in Wave 3. Questions focused on current and past enrollment, matriculation in programs, cumulative credits received, and certificates and degrees awarded. The validity of these self-reports was established by comparing them (with individuals' permission) with Social Security Number (SSN)-matched records in the Oregon Community College Unified Reporting System (OCCURS) administrative database for the 18 community colleges in Oregon. There was a very high level of agreement between self-reported postsecondary certificates and degrees received and the corresponding records in the OCCURS database. It was not feasible to compare self-reported credits and matriculation status systematically with matched OCCURS records.

Although many individuals reported participating in postsecondary education and training courses, very few were awarded certificates or degrees by two- or four-year institutions. Fewer than 20 certificates and degrees were awarded to LSAL respondents—too small a number to reliably disaggregate by prior participation in ABS programs. The dependent variables that will be analyzed are: (1) whether the individual took any postsecondary courses (credit or noncredit); (2) whether the individual matriculated in a postsecondary certificate- or degree-granting program; (3) whether the individual received any postsecondary credits;

and (4) number of credits the individual accumulated toward a certificate or degree.<sup>12</sup>

### Participation in Adult Basic Skills Programs

In each interview, individuals were asked if they currently were participating in adult basic skills programs to improve their reading, writing, or math skills or prepare for the GED Tests, or had done so within the preceding 12 months (asked in Wave 1) or since the time of the preceding interview (asked in Waves 2–6). Those who reported such participation were asked follow-up questions about timing, intensity, and duration of their participation. In the Wave 1 interview, they also were asked about their participation in such programs prior to 12 months before the first interview (back to the time they had dropped out of high school). These reports about ABS program participation were converted into variables for the number of hours of participation in each time period.

## Key Findings

### Patterns of Participation in ABS Programs

About two-thirds (68%) of the LSAL population participated in ABS programs between the time of leaving high school and the end of LSAL in 2007. This is much higher than the usual reported percentage of the adult education target population that is served in a given program year. There are several reasons for LSAL's higher participation percentage: (1) LSAL's 68 percent figure includes any participation over a long period of time rather than in a single year; (2) LSAL's population excludes adults age 45 and above, an age group usually included in official counts of the target population but one that rarely participates in programs; and (3) LSAL's figure includes *any* participation rather than the 12-per-year minimum hours typically included in state and federal program reports.

Participation patterns in LSAL were often complex and fragmented, with many adults having multiple episodes of participation at different times and in different programs across the years of the study.<sup>13</sup> For LSAL respondents who participated in ABS programs, total hours of participation accumulated across time are shown on page 3 in **Figure 1**.<sup>14</sup> **Figure 1** shows the estimated percentage of the LSAL population that ever participated in an ABS program through each given wave of the study (line graph), as well as the median total hours of program attendance accumulated by participants (bar graph). By the end of the study in 2007, over half (54%) of the LSAL population who had never participated in ABS programs when LSAL began had participated in ABS programs, accumulating a median of 74 hours of attendance between 1998 and 2006.

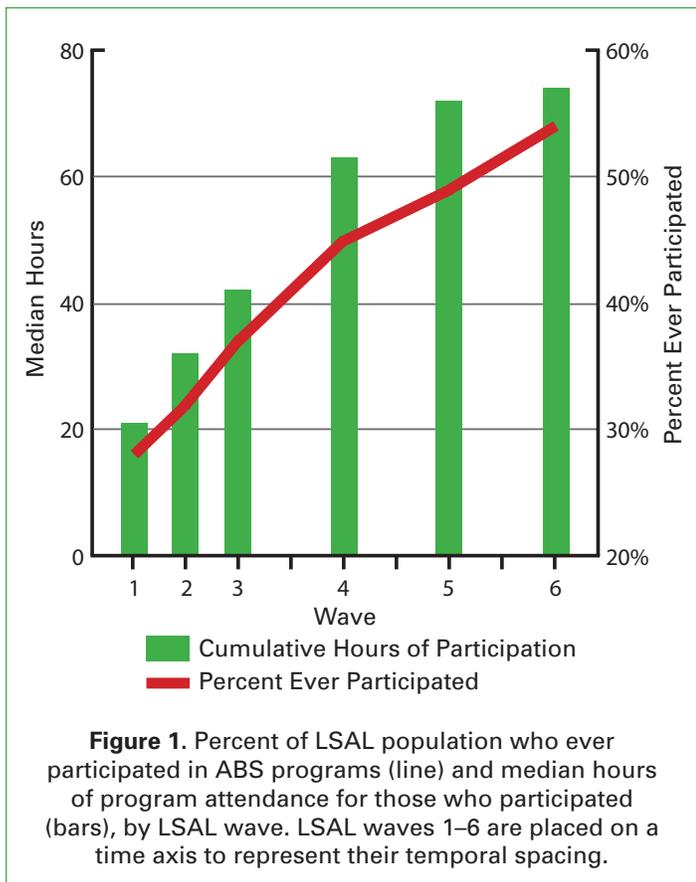


Figure 1 shows that most of this participation occurred early in the study. Two-thirds (68%) of those who had participated in ABS programs by Wave 6 started participating by Wave 3; 53 percent of all ABS participation hours reported through Wave 6 occurred by Wave 3. Slightly more than half (55%) of those who participated reported two or more periods of participation across the LSAL waves.

### Postsecondary Engagement

Individuals were asked in Wave 1 interviews about their educational aspirations. Two-thirds of the LSAL population (66.9%) indicated they wanted a college degree (either a two-year, four-year, or graduate degree). An even larger group (81.6%) indicated they wanted at least some postsecondary

education (a college degree, a certificate, or college courses). Despite this apparent widespread interest in postsecondary education, relatively few individuals had engaged at all in postsecondary education by Wave 6 eight years later. By Wave 6, about one-fourth (28%) of the LSAL population had had any postsecondary experience; 16 percent had matriculated in degree-granting programs; and 17 percent had completed any credits toward a degree. Among the minority who had received at least some credits, an average of 12 trimester credits had been received.<sup>15</sup>

### Impact of ABS Program Participation on Postsecondary Engagement

With most measures, the overall rate of postsecondary engagement appears to be higher among individuals who participated in ABS programs than among nonparticipants. Table 1 displays the four postsecondary engagement measures for ABS program participants and nonparticipants in LSAL and the entire LSAL population. The average number of postsecondary credits received appears to be the same among ABS participants and nonparticipants.

Care must be taken in evaluating and interpreting these differences in postsecondary engagement between ABS participants and nonparticipants. First, individuals self-selected in terms of participating in ABS programs, and there may be other important differences between the two groups as well. The effects of those other differences may be confounded with the effects of participation; this often is termed *selection bias* in program evaluation literature.<sup>16</sup> Some selection bias in LSAL could be due to differences in observable characteristics of participants and nonparticipants such as age, amount of education, race/ethnicity, immigration status, and so on. *Propensity score matching* methods are used to control for selection bias attributable to these observable individual characteristics. A propensity score in this context can be thought of as an estimated probability that an individual is a participant (received the “treatment” of ABS programs) versus a nonparticipant (did not receive “treatment” and, therefore, can be thought of as a member of a “control” group).

**Table 1. Postsecondary Engagement for ABS Participants and Nonparticipants**

Participation	Percentage with Any Postsecondary Courses	Percentage Matriculated in Postsecondary Program	Percentage Receiving Any Postsecondary Credits	Average Number of Postsecondary Credits Received
ABS Participants	31.3	17.9	19.7	2.02
Nonparticipants	22.0	12.2	11.9	1.98
LSAL Population	28.3	16.1	17.2	2.00

**Table 2. Treatment Effects Models of ABS Program Participation Impact on Postsecondary Engagement**

Postsecondary Engagement	ATET	Std. Err.	<i>t</i>	Mean for Participants	Counterfactual Mean for Nonparticipation
Any postsecondary courses	0.148	0.050	2.952**	0.310	0.162
Any postsecondary matriculation	0.136	0.038	3.595***	0.178	0.042
Any postsecondary credits	0.168	0.038	4.402***	0.197	0.029
Number of postsecondary credits	1.777	0.756	2.350*	2.047	0.270

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

Propensity scores were calculated for predicting participation in ABS programs using individuals’ age, gender, race/ethnicity, age at school dropout, years of schooling completed (before dropping out), presence of learning disabilities, enrollment in special education classes in school, immigration status, and level of parental education. These propensity scores were matched<sup>17</sup> to identify groups of participants and nonparticipants (which aside from their participation status were statistically alike).

These matched propensity scores were used to estimate *average treatment effects on the treated* (ATET) of participating in ABS programs on postsecondary engagement. The ATET compares the actual postsecondary engagement of individuals who participated in ABS programs with a model-based estimate of their postsecondary engagement that would have occurred had they not participated in those programs (a so-called *counterfactual*). **Table 2** displays the ATETs calculated for the different measures of postsecondary engagement, with participation defined as *any* ABS program attendance. For each measure, the table shows the estimated ATET, the standard error of the estimate, and the corresponding *t*-value from a test of statistical significance.

The table also displays the model-based estimates of the mean value of the postsecondary outcome for ABS participants and the counterfactual mean value had they, in fact, *not* participated in ABS programs.

The proportion of the population taking any postsecondary courses appears to have been impacted significantly by ABS program participation (ATET=0.148, std. err.=0.050, *t*=2.952, *p*<0.01). The treatment effects model estimates that the fraction of ABS program participants who took postsecondary courses, 0.310, would have been much lower (0.162) had they not participated in ABS programs.

There was also a strong impact of ABS participation on the binary outcome of matriculation in a postsecondary program

(ATET=0.136, std. err.=0.038, *t*=3.595, *p*<0.001). The treatment effects model estimates that the proportion of ABS participants who matriculated in postsecondary programs, 0.178, would have been only 0.042 had they not participated in ABS programs.

ABS participation also had a strong impact on the binary outcome of receiving any credits from postsecondary courses (ATET=0.168, std. err.=0.038, *t*=4.402, *p*<0.05). The treatment effects model estimates that the proportion of ABS participants who received postsecondary credits, 0.197, would have been only 0.029 had they not participated in ABS programs.

The average number of total postsecondary credits received per person (including those who received no credits) also was impacted significantly by ABS program participation (ATET=1.777, std. err.=0.756, *t*=2.350, *p*<0.05). The treatment effects model estimates the average number of postsecondary credits received by prior ABS participants to be 2.047, compared with a near-zero number (0.270) of credits if they had not participated in ABS programs.

To explore the robustness of these findings, these treatment effects models were re-estimated using alternative definitions of ABS program participation. **Tables A1, A2, and A3** in the Appendix display the results for treatment effects models based on alternative definitions of participation in terms of number of hours of attendance. The overall results are similar to those seen in **Table 2**. Participation in ABS programs had significant, positive impacts on all measures of postsecondary engagement. Furthermore, as the criterion number of hours for participation increases from 1 to 100 to 150, there is a general trend for the mean postsecondary engagement outcomes of participants to increase as well as the size of the estimated treatment effects for participation.

### Discussion

The central finding of this Research Brief is the robust impact of ABS program participation on engagement in postsecondary education. Treatment effects models estimate substantial impact of participation on all measures of postsecondary engagement when participation is defined as either *any* attendance or as 100 or more hours of attendance. The estimated impact of ABS participation on postsecondary engagement appears to be considerably larger in models using more intensive attendance criteria.

Previous longitudinal research on transition of adult education students into postsecondary education found relatively small percentages who ever completed credit-bearing college courses.<sup>18</sup> The experiences of the LSAL population were similar: although most LSAL adults had postsecondary educational aspirations, relatively few (28.3%) ever took college courses and only 17.2 percent ever took credit-bearing college courses. Recent studies of adult education “bridge” programs, in which college-preparation/college-readiness supports are provided to enhance ABS programs, have found promising results. These bridge programs appear to elevate rates of postsecondary engagement, generating higher rates of postsecondary matriculation, receipt of college credits, and progression along pathways to the “tipping point” of postsecondary success.<sup>19</sup> The present research adds to this small base of key research on postsecondary transition by demonstrating the importance of ABS programs in these pathways. Whereas other studies have examined the pathways and interventions for adult education students, the present findings address the impact of offering ABS programs to the target population as “on-ramps” into postsecondary education. According to the findings presented in this Brief, these programs are increasing ABS students’ success in the early stages of postsecondary engagement (matriculating into college, receiving credits for college courses) and, thus, do serve as effective on-ramps into postsecondary education for this nontraditional student population.

There are some important methodological limitations to these analyses. The treatment effects models are based on propensity score matching to control selection bias, which relies on observable individual characteristics but does not control for unobserved individual characteristics. Despite methodological limitations, the analyses of the LSAL data provide strong evidence of the importance of ABS programs in supporting postsecondary engagement.

Additional research with larger longitudinal data sets and those drawn from other contexts can help clarify some of the important details not systematically considered in these analyses. The participation impact models developed here

could be extended and more fully evaluated if applied to larger longitudinal data sets that follow the postsecondary education and training experiences of comparable ABS program participants and nonparticipants and incorporate administrative data from postsecondary institutions. In addition to enriching our understanding of the postsecondary transition process, additional research can help us better understand the individual and institutional factors that subsequently shape the ultimate success of students who do enroll in postsecondary programs.<sup>20</sup>

### Notes and References

- 1 Hanushek, E. A., Schwerdt, G., Wiederhold, S., & Woessmann, L. (2013). *Returns to skills around the world: Evidence from PIAAC* (OECD Education Working Paper No. 101). Paris: OECD Publishing. Retrieved from <http://dx.doi.org/10.1787/5k3tsiqmvtq2-en>. Organisation for Economic Cooperation and Development. (2013). *OECD Skills Outlook 2013: First results from the Survey of Adult Skills*. Paris: OECD Publishing. Retrieved from <http://dx.doi.org/10.1787/9789264204256-en>. Organisation for Economic Cooperation and Development. (2013). *Time for the U.S. to reskill? What the Survey of Adult Skills says*. Paris: OECD Publishing. Retrieved from <http://dx.doi.org/10.1787/9789264204904-en>.
- 2 Acemoglu, D., & Autor, D. H. (2011). Skills, tasks, and technologies: Implications for employment and earnings. In D. Card & O. Ashenfelter (Eds.), *Handbook of labor economics* (Vol. 4; pp. 1043-1171). Amsterdam: Elsevier-North Holland. Hanushek, E. A., Jamison, D. T., Jamison, E. A., & Woessmann, L. (2008). Education and economic growth: It’s not just going to school, but learning something while there that matters. *Education Next*, 8 (2), 62-70. Heckman, J. J., Stixrud, J., & Urzua, S. (2006). The effects of cognitive and noncognitive abilities on labor market outcomes and social behavior. *Journal of Labor Economics*, 24 (3), 411-482. Pryor, F. L., & Schaffer, D. L. (1999). *Who’s not working and why: Employment, cognitive skills, wages, and the changing U.S. labor market*. Cambridge, MA: Cambridge University Press. Reder, S. (2010). *Adult literacy and economic growth*. Washington, DC: National Institute for Literacy.
- 3 Parker, J., & Spangenberg, G. (2013). *Stepping up to ROI in adult education: A survey of state activity*. New York: Council for the Advancement of Adult Literacy. Retrieved from <http://www.caalusa.org/SteppingUptoROI.pdf>.
- 4 Beder, H. (1999). *The outcomes and impacts of adult literacy education in the United States* (Report No. 6).

- Cambridge, MA: National Center for the Study of Adult Learning and Literacy. Retrieved from <http://ncsall.net/index.php?id=669.html>. Brooks, G., Davies, R., Ducke, L., Hutchison, D., Kendall, S., & Wilkin, A. (2001). *Progress in adult literacy: Do learners learn?* London: The Basic Skills Agency. Lesgold, A., & Welch-Ross, M. (Eds.). (2012). *Improving adult literacy instruction: Options for practice and research*. Washington DC: National Academies Press. Miller, B., Esposito, L., & McCardle, P. (2011). A public health approach to improving the lives of adult learners: An introduction to the *Special Issue* on adult literacy interventions. *Journal of Research on Educational Effectiveness*, 4, 87-100. Smith, M. C. (2009). The educational psychology of reading in adulthood. In M. C. Smith (Ed.), *Handbook of research on adult learning and development* (pp. 201-218). New York and London: Routledge.
- 5 Reder, S. (2012). *The Longitudinal Study of Adult Learning: Challenging assumptions*. Montreal: The Centre for Literacy. Smith, M. C. (2009). The educational psychology of reading in adulthood. In M. C. Smith (Ed.), *Handbook of research on adult learning and development* (pp. 201-218). New York and London: Routledge. Vorhaus, J., Litster, J., Frearson, M., & Johnson, S. (2011). *Review of research and evaluation on improving adult literacy and numeracy skills* (Research Paper No. 61). London: Department for Business Innovation and Skills. Wolf, A., & Evans, K. (2011). *Improving literacy at work*. London: Routledge.
  - 6 Reder, S. (2013). Lifelong and life-wide adult literacy development. *Perspectives on Language and Literacy*, 39 (2), 18-21.
  - 7 Sampling weights calculated for each panel member were used to make estimates for the defined target population from the sampled panel data.
  - 8 Analysis of missing interviews indicates that they were *missing at random* (MAR) with respect to the variables examined.
  - 9 Respondents were paid for each of these sessions.
  - 10 Individuals were interviewed at about the same time in each wave so that there was approximately constant spacing among individuals' successive interviews and assessments (e.g., a respondent interviewed in February 1999 in Wave 1 was interviewed during February 2000 for Wave 2, February 2001 for Wave 3, etc.).
  - 11 The interview instruments are available at [www.lsal.pdx.edu/instruments.html](http://www.lsal.pdx.edu/instruments.html).
  - 12 The number of credits was top-coded at 45 because of a small number of widely dispersed values above that number.
  - 13 More detailed discussion is given in: Reder, S., & Strawn, C. (2001). Program participation and self-directed learning to improve basic skills. *Focus on Basics*, 4 (D), 14-17.
  - 14 Individuals who had participated in ABS programs prior to 1998 were not included because information about timing and hours of participation was incomplete prior to 1998.
  - 15 Community colleges and public universities in Oregon are on the trimester (quarter) system, with 90 credits required for an associate's degree and 180 credits required for a bachelor's degree.
  - 16 Angrist, J. D. (1998). Treatment effect heterogeneity in theory and practice. *The Economic Journal*, 114 (1), C52-C83. Imbens, G. W., & Wooldridge, J. M. (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature*, 47 (1), 5-86.
  - 17 Probit models were used to generate propensity scores, which were balanced within a region of common support for participants and nonparticipants.
  - 18 Prince, D., & Jenkins, D. (2005). *Building pathways to success for low-skill adult students: Lessons for community college policy and practice from a longitudinal student tracking study* (CCRC Brief No. 25). New York: Columbia University Teachers College, Community College Research Center. Available at: <http://67.205.94.182/presentation/statewide-longitudinal-tracking-study.html>.
  - 19 Martin, V., & Broadus, J. (2013). *Enhancing GED instruction to prepare students for college and careers: Early success in LaGuardia Community College's Bridge to Health and Business Program*. New York: MDRC. Smith, C. (2014). *Findings from the Adult Transitions Longitudinal Study*. Boston, MA: National College Transition Network. Retrieved from <http://www.collegetransition.org/docs/ATLAS%20webinar%20slides.pdf>.
  - 20 Quigley, A., Patterson, M. B., & Zhang, J. (2011). *Perceptions and pathways: Life decisions of GED Test credential recipients from secondary to postsecondary education: A preliminary report*. Washington, DC: American Council on Education, GED Testing Service. Retrieved from <http://www.gedtestingservice.com/uploads/files/e7ec4943a8688449a9d67ee9f1fda546.pdf>.

**Appendix: Supplementary Information and Tables**

**Tables A1, A2, and A3** show results parallel to those described in **Table 2** in the Research Brief narrative. Each of the tables in the Appendix estimates the impact of participation for the LSAL subpopulation that excludes individuals who first participated in ABS programs more than 12 months prior to their Wave 1 interviews (**Table 2** in the Brief includes all participants). In **Tables A1, A2, and A3**, participation is defined as *any* amount of program attendance, 100 or more hours, or 150 or more hours of attendance, respectively. In each of these tables, the treatment effects compare propensity score-matched individuals who attended the criterion number of hours and the control group who never participated.

The overall results in **Tables A1, A2, and A3** are similar to those described for **Table 2**. ABS program participation according to these analyses has significant, positive impacts on all measures of postsecondary engagement. Furthermore, as the criterion number of hours for participation increases from 1 to 100 to 150, there is a general trend for the mean outcome of participants to increase as well as the size of the estimated ATET for participation. These results, considered together, are consistent with a broad and robust impact of ABS program participation on postsecondary education—an impact that increases with increasing hours of ABS attendance.

**Table A1. Treatment Effects Models of ABS Program Participation on Postsecondary Engagement, with Participation Defined as Any Amount of Attendance**

Postsecondary Engagement	ATET	Std. Err.	<i>t</i>	Mean for Participants	Counterfactual Mean for Nonparticipation
Any postsecondary courses	0.102	0.056	1.835	0.348	0.246
Any postsecondary matriculation	0.124	0.042	2.927*	0.200	0.076
Any postsecondary credits	0.152	0.043	3.568**	0.225	0.073
Number of postsecondary credits	2.948	0.764	3.857**	2.961	0.013

\*p<0.01; \*\*p<0.001.  
 N treated=435 and N control=156 refer to actual nearest neighbor matches of propensity scores.  
 Excludes individuals who participated in ABS programs prior to one year before Wave 1.

**Table A2. Treatment Effects Models of ABS Program Participation on Postsecondary Engagement, with Participation Defined as 100 or More Hours of Attendance**

Postsecondary Engagement	ATET	Std. Err.	<i>t</i>	Mean for Participants	Counterfactual Mean for Nonparticipation
Any postsecondary courses	0.151	0.068	2.208*	0.324	0.173
Any postsecondary matriculation	0.137	0.058	2.381*	0.180	0.043
Any postsecondary credits	0.160	0.058	2.761**	0.209	0.049
Number of postsecondary credits	3.598	1.118	3.219**	2.924	-0.674

\*p<0.05; \*\*p<0.01.  
 N treated=225 and N control=95 refer to actual nearest neighbor matches of propensity scores.  
 Excludes individuals who participated 1-99 hours or prior to one year before Wave 1.

**Table A3. Treatment Effects Models of ABS Program Participation on Postsecondary Engagement, with Participation Defined as 150 or More Hours of Attendance**

Postsecondary Engagement	ATET	Std. Err.	<i>t</i>	Mean for Participants	Counterfactual Mean for Nonparticipation
Any postsecondary courses	0.216	0.066	3.260**	0.505	0.289
Any postsecondary matriculation	0.154	0.058	2.672**	0.285	0.131
Any postsecondary credits	0.167	0.059	2.848**	0.336	0.169
Number of postsecondary credits	3.157	1.285	2.457*	7.215	4.058

\*p<0.05; \*\*p<0.01.

N treated=225 and N control=95 refer to actual nearest neighbor matches of propensity scores.

Excludes individuals who participated 1-149 hours or prior to one year before Wave 1.