



## Back to school: An application of human capital theory for mature workers

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### ABSTRACT

There is a vast literature on the decision to enroll in higher education, but it focuses almost entirely on traditional students: 18 year olds graduating from high school. Yet less than half of students at degree-granting institutions are in the traditional 18–22 age range; nearly 40% are at least 25. This paper examines the enrollment behavior of persons 25 or older. We use data from a large-scale 1998 Department of Labor (DOL) policy demonstration in Greater Baltimore. By studying the behavior of older people we can examine factors such as age, earnings and marital status that vary little among the much-studied traditional students. Our results conform to the (rarely tested) predictions of human capital theory that age and opportunity costs are impediments to enrollment. We also find that where you live has a substantial impact on whether you return to school.

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### 1. Introduction

Volumes have been written about individual decisions whether to enroll in higher education. But the vast majority of studies consider only high school seniors. This focus offers a rather narrow view of higher education because less than half of students at degree-granting institutions are younger than 22. Nearly 40% are at least 25 years old (U.S. Department of Education, 2008). Ignoring nontraditional students is increasingly problematic given that the return to school of mature workers appears to be a growing phenomenon. Studies by Marcus (1986) and Light (1996), for example, found that from 20 to 40% of men in the NLSY who leave school return within a relatively few years. Our study attempts to help fill this substantial gap in the literature by examining the enrollment in higher education of non-traditional students, persons between the ages of 25 and 65.

To examine the educational decisions of mature people, we take advantage of a unique 1998 policy experiment conducted by the U.S. Department of Labor in the Greater Baltimore area. It was called the Lifelong Learning Demonstration. The idea was to determine how mature (over 25) workers (there was an earnings criterion) would respond to an information campaign extolling the learning opportunities in the area's higher education community. The results were disappointing – the information campaign was insufficient to stimulate enrollment (Buron, Orr, & Patrabansh, 1999). But the project collected, from various sources, demographic information on more than 450,000 mature potential students. Administrative records of the Maryland Higher Education Commission revealed which of Maryland's 2-year or 4-year colleges, if any, these people attended between 1990 and 1998. A relatively small fraction, about 5%, did. Still, we have data on several tens of thousands of students and hundreds of thousands of non-students.

Because data from administrative sources are limited, Lifelong Learning also conducted a detailed telephone survey of 3600 of the sample members. The survey sample was weighted to heavily oversample enrollees. Our study

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employs both the administrative data and the survey. We know of no other data set that provides nearly such a comprehensive picture of the education behavior of mature individuals.

We model both the probability of enrolling in higher education and the number of credits taken once enrolled. Our results are consistent with the main hypotheses of human capital theory. Because older people have less time to recoup an educational investment, enrollment drops rapidly with age. Similarly, the human capital model predicts that opportunity costs of school, through lost earnings, should tend to discourage investment in schooling. We observe this effect strongly for attendance at community colleges, but less so for four-year institutions. Another discovery is that, consistent with trends observed among traditional students, mature women are about one third to one half more likely to pursue further education than their male counterparts.

Finally, we find that where you live has a substantial impact on whether you enroll. Our results show that controlling for the effects of location is important in obtaining accurate measures of the effects of demographic variables.

## 2. Why study mature students?

As argued above, focusing on traditional students has left a sizeable hole in the economic literature on higher education. People over 25 constitute a large, and largely ignored, fraction of the student population in the U.S. Mature (potential) students are also interesting on “theoretical” grounds, however. Consider the diagram in Fig. 1, showing the earnings benefit of a college education, as might appear in the human capital chapter of any labor economics text (e.g. Ehrenberg & Smith, 2006). The diagram illustrates that starting college at 22 generates lower net benefits than starting at 18 for two reasons: salary gains are lower for older students and opportunity costs are higher. But it is difficult to test the effect of age by studying students who are virtually all in their late teens – there is little age variation to observe.<sup>1</sup> There is a similar problem in measuring the effect of lost wages: many high school seniors will get low-paying jobs near the minimum wage (Card, 1992). It is hard to test the impact of earnings differentials among people whose earnings do not differ very much. For these reasons, studying mature (prospective) students should deepen our understanding of the human capital model.

Finally, consider the effect of gender observed among traditional students. In 1968, 46% of male and 25% of female high school graduates aged 18–22 enrolled in higher education. By 2008, the percentage for males had fallen slightly; the percentage for females had doubled (National Center for Educational Statistics, 2010). Older persons are likely to

face greater family responsibilities than young people, and women typically bear more family responsibilities than men. How does gender influence the enrollment rates of mature people?

## 3. Previous studies of the education decisions of older workers

As stated above, the economic literature on educational choice of mature people is relatively thin. Corman (1983) compared the behavior of 18–22 year olds with that of 25–44 year olds with respect to enrollment at a college<sup>2</sup> or, alternatively, an occupational school. She showed that older and younger students responded similarly to the economic incentives to attend school. Papers by Leigh and Gill (1997) and Light (1995) compared the earnings effects of returning to school, after a spell in the workforce, with those of continuing in school after high school. Jacobson, LaLonde, and Sullivan (1993, 2005) looked specifically at the return-on-investment that displaced workers can expect from returning to school at a community college. In a different paper, they considered mature workers' decisions whether to return to school (Jacobson, LaLonde, & Sullivan, 2002). Their observations were limited, however, to whether a particular group of displaced workers chose to attend community college.<sup>3</sup> More recently, Cheng (2010) looks at the role of risk in explaining gender differences in adult enrollment decisions.

Two previous studies have looked at how earnings experiences influence the decision to return to school after first leaving. Both limited their analysis to men, and both studied enrollment in “regular” school, defined as a secondary school, or a postsecondary school (two-year or four-year) that provides credit toward an academic degree. Using National Longitudinal Survey (NLS) data, Marcus (1986) found that a man who left school between 1966 and 1970 was more likely to return to school (within a seven year period) if his earnings fell below those predicted by his IQ and socioeconomic background. Light (1996) modeled the hazard rate of reenrolling, in a given year, for men in the National Longitudinal Survey of Youth (NLSY) who originally left school between 1978 and 1990. She found that holding a high-paying and/or full-time job made men less likely to go back to school. This result is consistent with human capital theory which suggests that the opportunity cost of forgone wages creates a disincentive to pursue further schooling.

Using the administrative data from the same demonstration, Jepsen and Montgomery (2009) look at the effect of distance on the decision of whether to enroll in community college and which school to attend. Simulation results suggest that if people had to travel an extra three miles to the nearest community college, then the likelihood of community college attendance drops by as much as 14%.

<sup>1</sup> Fig. 1 seems to beg the question: how could an educational opportunity, rejected at 18, ever become viable at 22? Remember that the standard human capital models assume that students can accurately predict earnings with and without a college education. A few years in the job market might revise their expectations. Heckman et al. (2006) provide a comprehensive theoretical treatment of role of earnings uncertainty in a dynamic model of education decisions.

<sup>2</sup> Corman's (1983) data set was unable to distinguish between a two-year and a four-year college.

<sup>3</sup> They also considered workers' decisions to enroll in training through the Job Training Partnership Act.

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