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## ASSESSING THE BENEFITS OF POSTSECONDARY EDUCATION<sup>1</sup>

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**Jack R. Clarcq & Gerard G. Walter**

### Abstract

As competition for public funding to support postsecondary education and training increases, public policy makers are demanding evidence of the benefits of their investments. This paper reports on the development of a model to assess return on investments made by the federal government (societal) in education of deaf and hard of hearing persons at the postsecondary level. It also deals with individual investments of deaf and hard of hearing students and a return or benefit on their personal investment. The model was adapted from work done by Ehrenberg and Smith at Cornell University and from joint research conducted by the National Technical Institute for the Deaf and the Social Security Administration.

### Need for Program Assessment

The United States has a long history of public policy focusing on "...increasing the ability of disabled workers to overcome their impairment through rehabilitation and job training" (Berkhauser & Haveman, 1982, p. 96). In the U.S., disability policy has provided job education and training, counseling, and job-placement services designed to assist the disabled worker gain access to and accommodation in the work place and society at large.

As competition for public funding to support education and training programs for working age disabled persons increases, programs are under increasing pressure to document and communicate the individual and societal benefits of their efforts. "Disability programs resulting from public policy and supported by federal and state funding are being challenged to see... whether the programs comprise the most efficient and equitable means of providing protection and social adequacy. [The evaluation is being spurred by a sense that]... the costs [of] these programs and taxes required to finance them are greater than necessary to provide a socially acceptable safety net" (Berkhauser & Haveman, 1982, p. 1). James

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<sup>1</sup> The research reported in this document was conducted in the course of an agreement between Rochester Institute of Technology and the U.S. Department of Education.

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Carpenter states “As dollars become more scarce, accountability will become more strict. If [funded] programs cannot show quality use of dollars, then [the] chance of securing... funding is not good” (Forest, 1989, p. 341).

Programs that prepare working age disabled persons for employment are accountable to a broad constituency base including students/clients, parents, employers, professionals, philanthropists, government policy makers, and the general public. Organizations need to provide constituencies with “...a better sense of what is being achieved with public resources” (Ruppert, 1994, p. 2).

While it is assumed that programs for individuals with disabilities facilitate career enhancement and improvement in the quality of life for individuals, public officials also view the venture as a strategic investment (Ewell, 1991). “From this perspective, accountability becomes less a question of equitable and efficient operations than documenting a concrete return on investment”(Ewell, 1991 p. 14). Programs need to assess both individual and societal benefits. A fundamental question is “Does society receive a good return for its... investment or would the money be better spent elsewhere?” (Leslie, 1990, p. 271). Similarly, does an individual receive benefits from their investment in education? Programs should also address the following questions.

- “Does public policy yield employment and earnings benefits in excess of their costs, or do they fail to meet such an efficiency test? “(Berkhauser & Haveman, 1982, p. 67).
- What impact does education have on reducing dependency on Federal SSI and SSDI transfer programs?

There is a need to determine if publicly supported institutions, focusing on employment needs of disabled individuals, are achieving benefits tied to their mission and goals and in relationship to financial resources provided. Leaders should be proactive and not wait for a crisis to occur before documenting their institution’s benefits. “Administrators who want to strengthen the position and image of their agency... can emphasize to... stakeholders the contributions and benefits to the agency that the stakeholders value. It is especially important to emphasize these contributions and benefits on an ongoing basis and not wait until budget cuts or other problems arise” (Knox, 1991, p. 245).

In 1965 the U.S. Congress passed the National Technical Institute for the Deaf (NTID) Act. This act was created in response to a need for postsecondary technical education and training for deaf individuals to prepare them for job entry and career mobility. NTID, a college of

Rochester Institute of Technology (RIT), receives approximately 80 percent of its annual budget from the federal government. NTID must challenge the premise that "...government intervention does not always yield benefits commensurate with costs" (Berkhauser & Haveman, 1982, p. 103).

Professionals working in the area of rehabilitation and education for deaf and hard of hearing persons have for a long time indicated that some of these people are made dependent by their reliance on funds available through SSI and SSDI. Yet there is no research to indicate whether such dependence exists and what variables impact receipt of such payments. NTID has a concern about the impact that education has on reducing dependency on these payments.

The goal of the research reported here is to document individual and societal investments and benefits of higher education. The following questions were addressed:

- What is the relationship between educational level and individual investments and benefits?
- What is the relationship between educational level and societal investments and benefits?

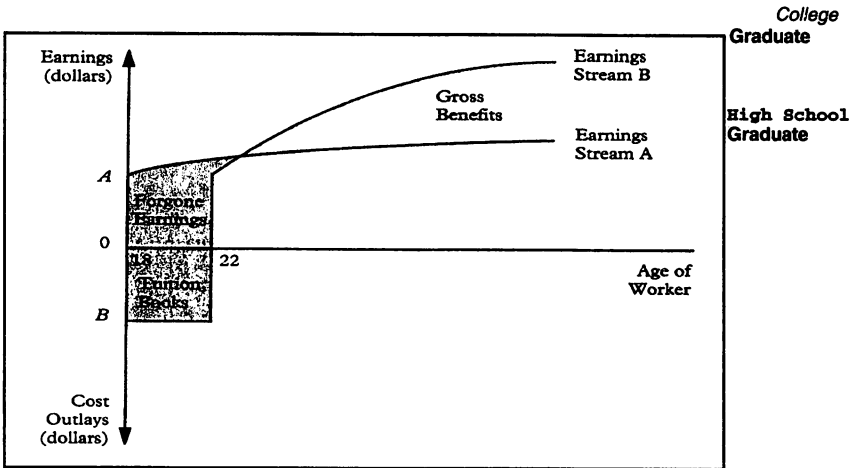
### **Return on Investment — A Model**

A model designed by Ehrenberg and Smith of Cornell University (1994) was used as a base for the information that follows (see *Figure 1*). In this model investments in education include costs of education and the outlay of funds to cover those costs. The costs also include lost earnings during the time the person was a student. Benefits are measured by increased earnings that result from these investments.

Investments in and benefits of education can be both individual and societal. Individual investments include forgone earnings, out-of-pocket costs, and loans incurred to cover educational costs. Increased earning power and improved quality of life are benefits of these individual investments. Societal investments include scholarships, direct state and federal appropriations, and grants in aid. The benefits to society from such investments include increased taxes as a result of higher earnings, reduced dependence on public assistance and an enlightened citizenry.

**Figure 1.**

A model for assessing return on investment in education.



Source: Ehrenberg & Smith (1994)

### Applying the Model

The model was applied to NTID graduates in order to provide information about individual and societal benefits. To do this, an annuity formula (Ehrenberg & Smith, 1994) was adapted to spread the costs of education over a lifetime of work (40 years). The calculation was made using the formula:

$$\frac{Y - [1/(1+r)^n]}{r}$$

Here Y equals the total investment, X equals the yearly payment resulting from the investment, r equals the rate of interest realized, and n equals the number of years of work. Solving the equation for X yields a yearly amount a person must earn to return their investment.

### Individual Benefits

The formula was applied to an average NTID bachelors graduate who has spent six years to get an education, and individually invested a total of \$96,000<sup>2</sup> (Y in the formula). This student must make \$3,290 (X in the formula) a year more than a person who did not attend NTID. The \$3,290 assumes that a person will work for 40 (n in the formula) years and

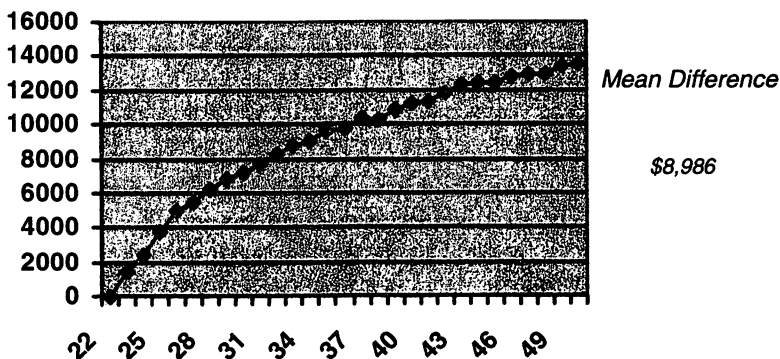
<sup>2</sup> \$60,000 in lost earnings and \$36,000 for out of pocket expenses.

net 2 percent on their investment ( $r$  in the formula) a year. This is after discounting the interest rate (6%) by an average inflation rate of 4 percent.

After determining the amount a student must make each year to recoup their investment in education (\$3,290), the authors calculated how much this amount exceeds the earnings of individuals who did not make the investment in higher education. *Figure 2* plots the differences in earnings between NTID bachelor graduates and high school graduates who did not attend college. As can be observed, the difference grows each year. For the first 25 years of work (age 25 to 50) the mean difference between deaf workers with only a high school diploma and deaf workers with a bachelor degree from RIT averages \$8,986 per year.

**Figure 2.**

Earnings differences between NTID bachelor graduates and high school graduates.



### Societal Benefits

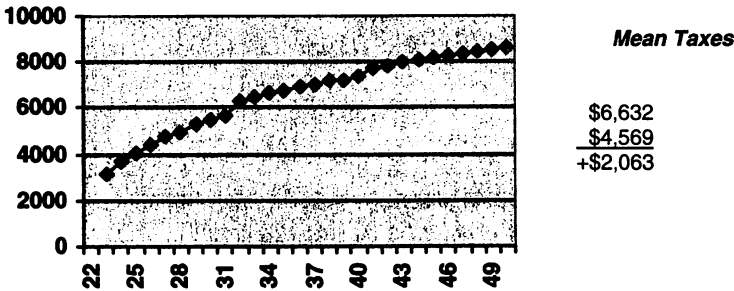
The federal government contributes annually approximately \$25,000 to the support a student attending NTID. For a student enrolled in a bachelor's degree program this will total approximately \$125,000 by the time of graduation. The same annuity formula described above can be applied to determine the amount of taxes a student must pay each year in order to return the \$125,000 to the federal treasury. From these calculations we find that a student will need to contribute an average of \$4,569 dollars in taxes each year for 40 years to return the federal

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investment. *Figure 3* shows that for 25 years of work<sup>3</sup> NTID bachelor graduates contribute an average of \$6,632 in federal taxes. This figure represents an additional \$2,063 taxes paid on average to the federal treasury, beyond the \$4,569 needed to repay the federal investment.

**Figure 3.**

Federal taxes paid by deaf and hard of hearing bachelor graduates.



**Discussion**

Investments in college are individual and societal. Individual investments for students attending NTID can easily amount to \$16,000 a year when one considers \$10,000 in lost wages and average out-of-pocket expenses of \$6,000. For four years of college these investments can total \$64,000. The model presented in this paper demonstrates that deaf and hard of hearing bachelor degree graduates earn additional income after graduation to more than return their individual investment. After 25 years of work, NTID bachelor degree graduates earn, on average, \$8,986 per year more than deaf or hard of hearing persons with only a high school diploma. This amounts to a net annual individual return on investment of \$5,696, after subtracting their annuitized initial investment in their education of \$3,290.

The federal government annually contributes \$25,000 to support the education of deaf and hard of hearing students at NTID. For a 5-year bachelor program this amounts to \$125,000. This paper demonstrates that bachelor degree graduates return to the federal treasury an average of \$6,632 per year in federal taxes during their first 25 years of employment.

<sup>3</sup> Since NTID's oldest bachelor alumni have only been in the workforce 25 years we can only report on earnings covering that length of time.

This figure exceeds, by \$2,063, the annuitized amount of \$4,569 required payback the federal investment for their education.

## Implications

Studies conducted at NTID in collaboration with the Social Security Administration show that deaf and hard of hearing 30 year olds, with only a high school diploma, are more than three times as likely to be receiving SSI or SSDI than deaf or hard of hearing persons with a bachelor degree. These findings indicate that deaf and hard of hearing persons with only a high school diploma continue, as a group, to withdraw monies from the federal treasury well into their adult life. Conversely, deaf and hard of hearing college graduates, as a group, contribute to the treasury throughout a lifetime of work.

As a field, education for deaf and hard of hearing persons, needs to develop national normative information of the type presented in this paper to demonstrate the costs and benefits of funding postsecondary education. This can begin if individual programs develop databases to document the costs and benefits of their program. Finally, there is a need to communicate the results of such research to policy makers and funding agencies.

A next step for NTID is to develop a comprehensive societal cost and benefit model. The model will compare high school graduates who did not attend college with those attending NTID and exiting with degrees. This model will incorporate annualized earnings, annual federal taxes, federal transfer payments and labor force participation to estimate the return in investment to the federal treasury.

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