

# Iowa Adult Literacy Profiles

## A Secondary Analysis of the Iowa State Adult Literacy Survey (IASALS)

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### The Economics of Adult Literacy in Iowa

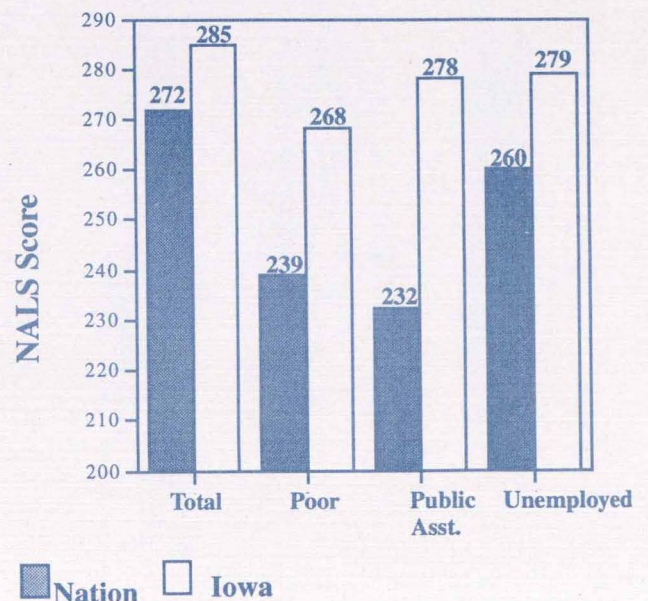
*This is the second issue of Iowa Adult Literacy Profiles, a series which utilizes data from the Iowa State Adult Literacy Survey (IASALS) to explore issues of interest to planners and policy makers in adult education, job training, and human services. The purpose of this issue is to explore the literacy performance of Iowa's adult population in relation to: (1) employment status, (2) occupational status, (3) personal income, (4) basic education, and (5) GED diploma status. The IASALS was conducted as part of the National Adult Literacy Survey (NALS). Data were gathered in 1991 from a random sample of 1,246 Iowa residents and include scores from a test of adult literacy (the NALS test) as well as a wide range of social, economic, and demographic variables.*

### Introduction

After careful examination of the NALS initial report, *Adult Literacy in America*, (Kirsch et. al., 1993) it is clear that the relationship between adult literacy levels and social and economic well-being is very strong in the United States. Nationally, of

those who scored at the lowest level of literacy (NALS score less than 225) on the NALS literacy test— about 22 percent of the population—nearly two-thirds had not completed high school, a third were over age 65, and a quarter had disabling conditions. The average weekly wages, for those who scored at the lowest level of prose literacy, were \$240 as compared with \$650 for those who scored at the highest level of literacy (NALS score of 376 or higher). As **Figure One** demonstrates, the relationships between literacy levels and indicators of economic well-being also hold true for Iowa, although they are considerably less pronounced.

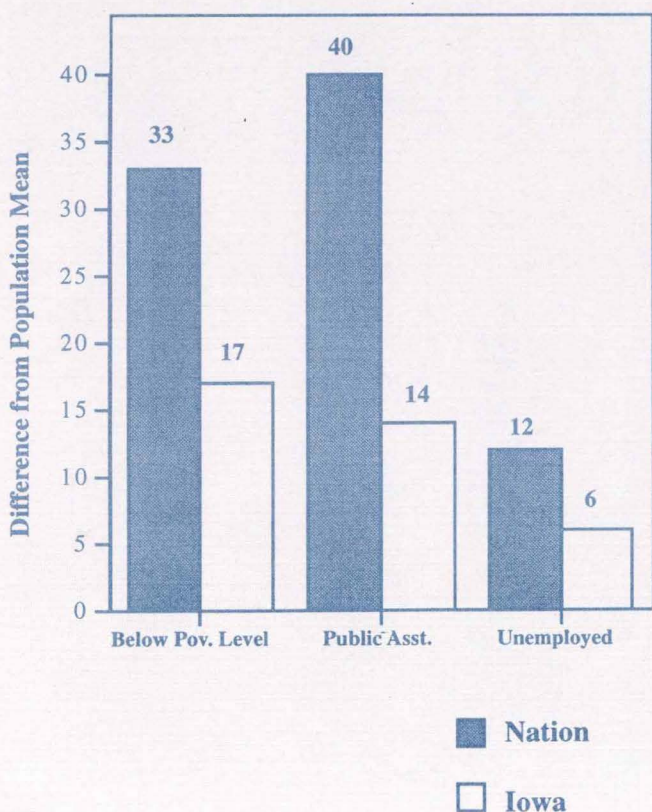
**Figure One: IASALS Prose Scores Compared to NALS Prose Scores for Those Below Poverty Level, The Unemployed, and Those on Public Assistance.**



**Figure One** indicates that Iowans score significantly higher than the national average on the NALS test. Likewise, Iowa residents who are in a state of economic deficit (below the poverty level, on public assistance, or unemployed) score higher than comparable national groups.

As **Figure Two** shows, the differences between these “economic deficit” groups and their respective population averages are considerably less for Iowa than they are for the nation. Clearly, while the poor, those on public assistance, and the unemployed in Iowa score lower than the state average on the NALS literacy test, these groups are considerably better off in respect to literacy than comparable national groups. To the extent that scores on the NALS test reflect the quality of the labor force and the potential for groups in economic deficit to improve their economic status, the situation in Iowa is comparably favorable.

**Figure Two: A State and National Comparison of Differences in NALS Prose Scores, Between Economic Deficit Groups and The Population Means.**



While the data portrayed thus far are basically good news for Iowa, the findings merely scratch the surface. To provide a more detailed analysis, this issue of *Iowa Adult Literacy Profiles* will address the following questions:

- How are literacy scores related to employment status, both nationally and in Iowa?
- How are literacy scores related to occupational status, nationally and in Iowa?
- What factors, including literacy scores, are related to personal income?
- What are the economic impacts of Iowa’s adult basic education program?
- What is the economic value of earning a high school equivalency diploma?

## Literacy and Employment Status



National results indicate that age, race and gender are important intervening variables that affect the relationship between literacy and employment status. Although the sample size for the IASALS precludes an analysis of literacy and employment status that includes race and age, the sample is adequate for an analysis of gender. The results are displayed in **Table One**.

In Iowa, as in the United States, the *unemployed* score lower on the NALS test than do the *employed*. Yet, while nationally the difference between the NALS scores for the categories of *employed* and *unemployed* is 34 points, the difference is less than a third (11 points) of that for Iowa. Nationally, gen-

Table One

NALS Scores and Employment Status by Gender									
	Employed Full-time		Employed Part-time		Unemployed		Not in Labor Force		
	Nation	Iowa	Nation	Iowa	Nation	Iowa	Nation	Iowa*	
Male	287	304	267	293	251	277*	242*	268	
Female	288	307	285	300	255	281*	242	276	
Population	288	306	279	298	254	279	242	274	

\*Difference between National and Iowa significant (t-test) at .01. All other differences are significant at .0001.

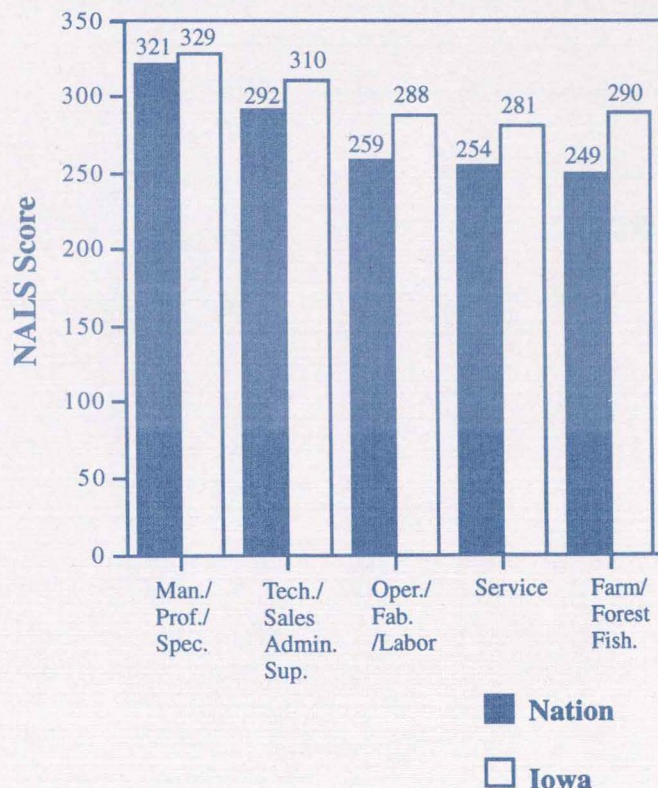
der differences in the NALS scores of *male part-time workers* (267) and *female part-time workers* (285) are substantial, while the gender differences between the categories *employed*, *unemployed*, and *not in the labor force* are quite small. The gender difference, in respect to part-time employment nationally, suggest that *female part-time workers* are an under-utilized segment of the labor force. While *Iowa female part-time workers* score higher (300) than *male part-time workers* (293) on the NALS test, the differences are too small to be significant.

## Literacy and Occupational Status



To analyze the relationships between literacy levels and occupational status, occupational code variables on the IASALS were collapsed into occupational status categories according to the 1989 *Dictionary of Occupational Titles* [see note one]. The results are shown in **Figure Three**.

Figure Three: NALS Test Scores for National Occupational and Iowa Occupational Groups.



*Not only is the literacy level of Iowa's workforce higher than the national level, but that difference extends to all occupational groups.*

**Figure Three** demonstrates that the Iowa NALS scores for occupational groups are higher than the national average for all occupational groups [see **note 2**]. Perhaps more important, the differences between Iowa and national NALS scores increase as the requisite skill level of the occupational group decreases. Specifically, the difference between national and Iowa NALS scores for *managers, professionals, and specialty occupations* is eight points; the difference for *service occupations* is 27; the difference for *operators, fabricators, and laborers* is 29 points; and the difference for *farm, forest, and fishing occupations* is 41 points. **Not only is the literacy level of Iowa's workforce higher than the national level, but that difference extends to all occupational groups.**

## Literacy and Income

The relationship between literacy level and income is strong in Iowa. While Iowans at the lowest level of literacy (NALS score less than 225) earn an average of \$258 per week, those at the highest level of literacy (NALS score of 376 or higher) earn \$514 per week. While the median annual household income for Iowa residents who score at the lowest level of literacy on the NALS is about \$11,800, the comparable figure for those who score at the highest level of literacy on the NALS is about \$42,900. Although these data are compelling, the relationship between literacy levels and earnings is to some extent compounded by the fact that the NALS score is related to, and interacts with, several other variables which also affect income.



For example: the correlation between annual earnings and age is .28, the correlation between annual earnings and educational attainment is .35, and the correlation between annual earnings and gender (male) is .26.

To control for the effects of age, gender, and educational attainment, a step-wise multiple regression analysis was conducted. Such a procedure permits us to analyze the independent effects of these variables on personal annual earnings. **Results showed that educational attainment had the largest effect on annual earnings** (R square = .12). Age had the next largest effect (R square = .06). Gender was next (R square = .06), and NALS score was last (R square = .03). Together the four variables accounted for 27 percent of the variance.

*From a social policy point of view, it then follows that increased and improved education is a valuable and rational public strategy for increasing the economic welfare of Iowa's citizens.*

This analysis is important when we consider the logic of cause and effect which is: **the provision and quality of education is an intervention over which society has a measure of control. Furthermore, education positively affects annual earnings and can increase literacy levels in salutary ways.** However, society cannot change gender or age; although it might, through education, choose to ameliorate age and gender-related social discrimination that adversely affects earnings. From a social policy point of view, it then follows that increased and improved education is a valuable and rational public strategy for increasing the economic welfare of Iowa's citizens. **If improvement of the current workforce is the objective, adult basic education is the logical educational strategy.** Given that it takes considerably more time for investments in elementary, secondary and higher education to pay off, these forms of adult basic education are most likely to impact the future workforce.

## The Impact of Adult Basic Education in Iowa



As previous research indicates (Beder & Valentine, 1987) most adult basic education students in Iowa are motivated to enroll in the adult basic education program to earn a GED diploma. **Thus, acquisition of the Iowa GED diploma is a useful indicator of learners' personal success in the adult basic education program.** Table Two compares those who have earned a GED certificate with those who were out of school and did not complete high school and those who graduated from high school.

**Table Two**

Those Who Did Not Complete High School, GED Recipients and Traditional High School Completers Compared on Various Economic Variables			
	Less than High School	GED	High School
NALS score	233	271	287
Annual Earning	\$10,137	\$11,304	\$18,036
Average Wk. Wage	\$147	\$170	\$293
Unemployed	11.2	4.3	4.2
Public Asst.	22.4	32.6	10.1
Mean Age	47	37	41

ANOVAs for NALS score, annual earnings and average weekly wage are significant at .001. Paired contrasts (Duncan) between GED and less than high school for annual earnings and average weekly wage are not significant. Chi Squares for unemployed and public assistance are significant, but the differences between GED and high school and the unemployed are not significant at the .05 level.

Table Two shows that GED graduates in Iowa score substantially higher on the NALS test than do high school dropouts who have not obtained a GED diploma. Those who have completed traditional high school score even higher. This trend runs counter to national NALS results which show that the scores of GED completers are not statistically significant from those who have earned a traditional high school diploma. **The difference in Iowa may well be due to the quality of secondary education in the state.**

Those who have GED diplomas earn more than those who lack high school certification, but the difference is not statistically significant. Traditional high school graduates earn significantly more than do GED graduates. GED graduates earn less than

traditional high school graduates partially because, in the IASALS sample, GED graduates are a younger group (mean age = 37) than traditional high school graduates (mean age = 41), and income normally increases as age increases.

**The employment rate for GED graduates and traditional high school graduates is essentially the same and is considerably higher than for those persons who lack high school certification.**

Although the data show that GED graduates' incidence of public assistance is higher than those who lack high school certification, the data are somewhat misleading. In Iowa, as in other states, the adult basic education program makes a concerted effort to serve welfare recipients. Thus, we might expect a higher proportion of welfare recipients to be among GED graduates. The data beg the real question, which is: **what proportion of those who were on welfare prior to entering the adult basic education program terminate welfare after acquiring GED certification?** While the IASALS cannot answer this question, the Iowa Department of Education (1992) reports **that of those Iowans who were on welfare before they passed the GED Tests, 70 percent had terminated welfare within two to ten years after acquiring the GED. Only five percent of those who did not receive welfare prior to passing the GED Tests did receive welfare two to ten years after acquiring GED certification.**

## The Economic Value of Earning a GED



Since earning an Iowa GED diploma is a major intended outcome for Iowa's adult basic education students, the economic value of this certification is of considerable importance; especially in light of a well publicized study of men in their 20s that reported that the GED certificate had little economic value (Cameron & Heckman, 1993). Although addressing the issue using IASALS data is not pos-

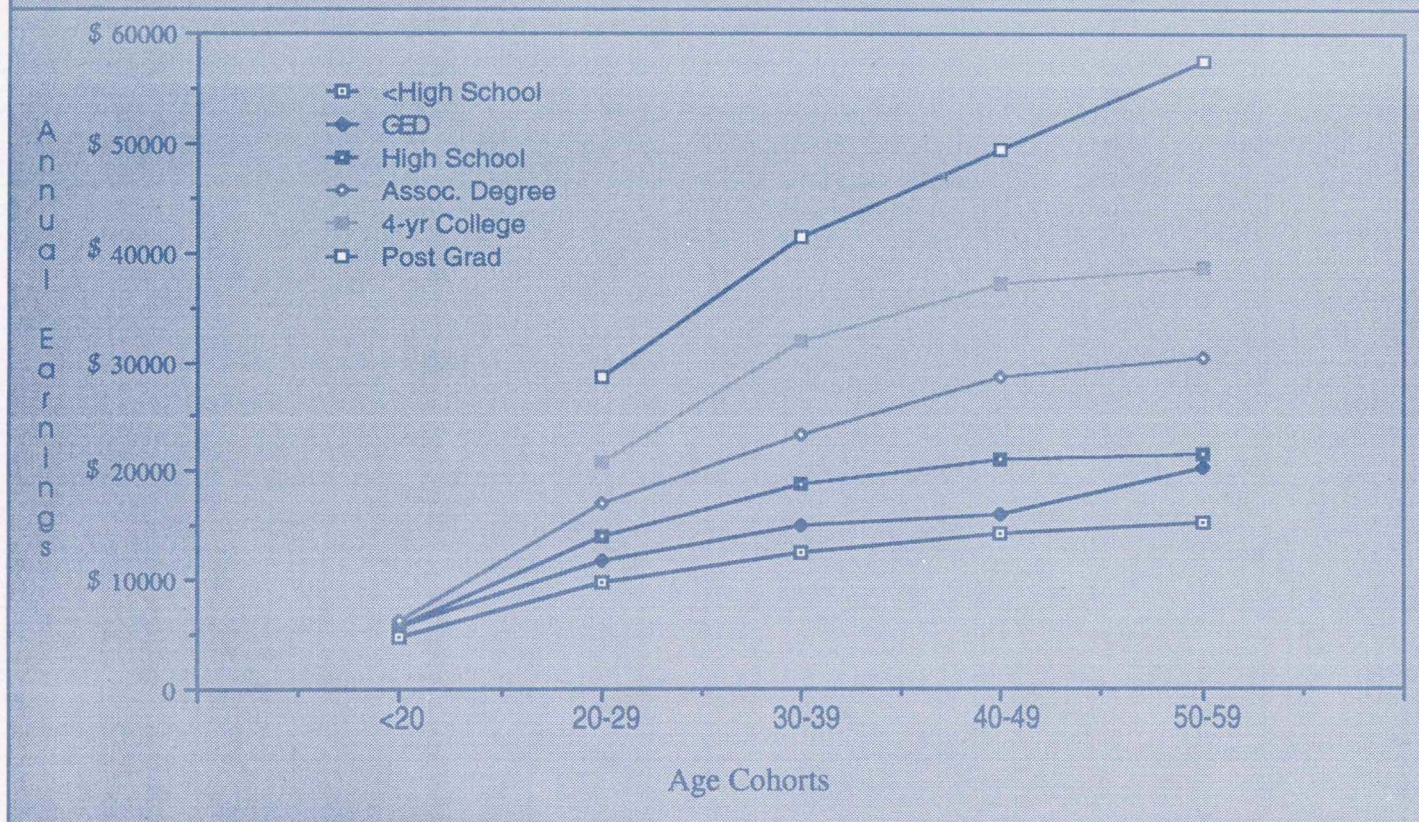
sible because of the sample size, it is possible to use national NALS data to demonstrate the effects of earning a GED diploma on annual earnings.

This approach has two limitations. First, since the NALS is not a longitudinal study, we cannot measure the earnings of each individual in the study over time. Second, since the NALS measures educational attainment as the highest level of education attained, we know nothing about GED graduates who went on to higher education.

## Implications

- **NALS scores for Iowa's adult population are higher than the national average, and scores for those below the poverty level, those on public assistance, the unemployed, and less skilled occupational groups are also above the national average.** These findings suggest that Iowans, who are in economic deficit, represent a relatively able labor pool which is more capable of benefiting from further education than similar groups nationally.

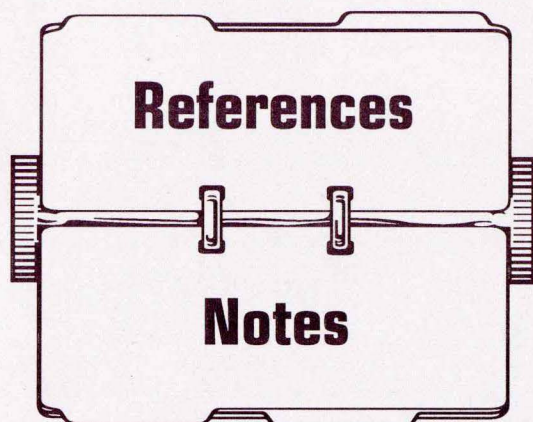
**Figure Four: The Relationship Between Earning a GED and Annual Earnings by Age**



**Figure Four** shows the relationship between earning a GED diploma and annual earnings, nationally, by age. The data demonstrate a strong relationship between *educational certification, age, and earnings*. It also indicates that GED graduates' earnings are only slightly greater than high school drop outs' up to age 40. **After age 40, GED graduates' earnings increase at a substantial rate so that by age 50 their earnings nearly equal those of traditional high school graduates.**

- **Using acquisition of a GED diploma as the outcome variable, the Iowa adult basic education program has been shown to produce important benefits.** These benefits are substantially enhanced, however, for those who continue their educations after earning a GED.
- **For these reasons it follows that the Iowa adult basic education delivery system**

should continue to build and strengthen links between basic education and higher education opportunities, especially since the relationship between educational attainment and economic benefit has been shown to be positive and substantial.



Beder, Hal and Valentine, T. (1987). *Iowa's adult basic education students: Descriptive profiles based on motivations, cognitive ability, and sociodemographic variables*. Des Moines, IA: Iowa State Department of Education.

Cameron, S., and Heckman, J. (1993). *The nonequivalence of high school equivalence*. *Journal of Labor Economics*, 11, 1, pp. 1-47.

Iowa Department of Education. (1992). *What has happened to Iowa's GED graduates: A two, five-, and ten-year follow-up study*. Des Moines, IA: Author.

Jenkins, L. and Kirsch, I. (1994). *Adult Literacy in Iowa: Results of the State Adult Literacy Survey*. Princeton, N.J.: Educational Testing Service.

Kirsch, I., Jungleblunt, A., Jenkins, L. and Kolstad, A., (1993). *Adult Literacy in America: A first look at the results of the National Adult Literacy Survey*. Washington, D.C.: United States Department of Education.

## Notes:

NALS and the IASALS report *Adult Literacy in Iowa* report three types of literacy scores, scores for prose literacy, document literacy, and quantitative literacy. The three scores inter-correlate highly. In those cases where we report data from the IASALS report, namely in **Figures One** and **Two**, we have used prose literacy as a surrogate for document and quantitative literacy. In those cases where we have conducted secondary analyses, for simplicity's sake we have reported an average of the three scores.

## Note One:

**Managerial, professional, and specialty occupations** = architects & surveyors, engineers, math/comp. scientists, natural scientists, registered nurses, health diagnostics, other related health, accountants/auditors, public sector executives and managers, private sector executives and managers, other management, teachers, other professionals.

**Technical, sales and specialty occupations** = engineering technicians, health technicians, science technicians, other technicians, sales representatives, sales supervisors and proprietors, other sales related, adjustors and investigators, computer equipment operators, information clerks, secretaries, steno/typists, supervisors, other administrative support.

**Operators, fabricators** = construction crafts, other craft and precision products, fabricators/inspectors/inspectors, other assemblers/fabricators/assemblers, cleaning equipment handlers.

**Service** = personal service occupations, public safety, health services, other services.

**Farm, forest, fishing** = manager/operators, other farm, forest, and fishing.

## Note Two:

The differences between national and Iowa for managerial, professional and specialty occupations are significant (t-test) at .01. All other differences are significant at .0001.

*Iowa Adult Literacy Profiles* is authored by Hal Beder, Rutgers University, New Brunswick, N.J. Dr. Beder also conducted the analyses of the IASALS data upon which this issue is based.

Graphic Artist - Sharon K. Willis, Iowa Department of Education.

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