

FORCES CHANGING OUR NATION'S FUTURE

**The Comparative Performance of U.S. Adults and Youth
on International Literacy Assessments, the Importance of
Literacy/Numeracy Proficiencies for Labor Market Success,
and the Projected Outlook for Literacy Proficiencies
of U.S. Adults**

Prepared for the National Commission on Adult Literacy

**by
Andrew Sum
Professor of Economics & Director,
Center for Labor Market Studies, Northeastern University**

June 18, 2007

CONTENTS

FOREWORD (with List of Commissioners)	i
AUTHOR'S INTRODUCTION & EXECUTIVE SUMMARY	v
Three Forces Are Changing Our Nation's Future	1
Range of Scale Scores Corresponding to Each Literacy Level on the International Adult Literacy Survey (IALS)	2
Comparisons of the Weighted Mean Scores of Adults in the U.S. and All High-Income Countries on the Prose, Document, Quantitative and Composite Scales, and the U.S. Rank Among the 20 High-Income IALS Countries	3
Comparisons of the Mean Composite Scores at Selected Percentiles of the Composite Score Distribution, U.S. and All 17 High-Income Countries in the IALS Assessment	4
Standard Deviations of the Scores of U.S. Adults on Each Literacy Scale and Their Rank Among the 20 High-Income IALS Countries	5
U.S. Students' (15 Years Old) Performance in Reading and Math on the Programme for International Student Assessment (PISA), 2000 and 2002	6
U.S. Performance Among 22 Countries	7
U.S. Students' Performance on the Math Assessment in 2003 Among 23 High to Middle Income OECD Countries	8
Mean Scores of U.S. Adults (16+) on the Prose and Quantitative Scales by Age Group, 2003 NAAL Assessment	9
Employment Rates of U.S. Men (Age 16 to 65), by Prose Proficiency Level	10
Employment Rates of U.S. Women (Age 16 to 65), by Composite Proficiency Level	11
Percent of U.S. Adults (16+) Employed Full-Time in 2003 by Their Proficiency Level on the NAAL Prose and Quantitative Scales	12
Percentage of Employed U.S. Adults (Age 16 and Older) with Specified Educational Attainment and Prose Proficiency Levels Who Were Able to Obtain Employment in Professional, Managerial or Technical Occupations	13
The Size of the Gaps Between the Mean Document Proficiencies of U.S. Managers/Professionals and Other Occupational Groups, in Absolute Differences and in Standard Deviations Units	14

Training Experiences of Young Adults in the U.S., by Educational Attainment, 1986-1991(Numbers in Percent)	15
Odds of U.S. Employed Adults (Age 16 to 65) Receiving Some Employer-Sponsored Adult Education or Training at Work, by Level of Literacy Engagement at Work (Odds Ratio = 1 for Lowest Quartile)	16
Mean Annual Earnings of Employed 20-64 Year Old Immigrant Workers with 12 or Fewer Years of Schooling by Educational Attainment, Total and by Gender, U.S., 2004	17
Mean Annual Earnings of 20-64 Year Old Employed Immigrant Workers With 12 or Fewer Years of Schooling	18
Mean Annual Earnings of 20-64 Year Old Employed Immigrant Workers in Selected Educational Attainment/English-Speaking Proficiency Groups, U.S.: 2004 (in \$1,000)	19
What might the future look like?	20
Predicted Prose and Quantitative Scores for 16-65 Year Old Adults in the U.S. in 2030, Assuming 1992 NALS Mean Prose and Quantitative Scores of Each Race/Ethnic Group are Maintained in 2030	21
The Mean Prose and Quantitative Scale Scores of U.S. Adults (16+) in 2003 by Race-Ethnic Group and Projected to 2030 (NAAL Results)	22
Distribution of Literacy Scores Found in the National Adult Literacy Survey (1992)	23
Average literacy scores are expected to decline between 1992 and 2030, with an increase in the amount of inequality.	24
Comparisons of the Percentage Distribution Across Proficiency Levels and Mean Scores of the U.S. Adult Population (16-65) and the Pool of Participants in Adult Basic Education Programs on the Prose Scale	25
Comparisons of the Percentage Distribution Across Literacy Levels and Mean Scores of the U.S. Adult Population (16-65) and the Pool of Participants in Adult Basic Education Programs on the Numeracy Scale	26
The Per Cent of Adult Education Learners with a Proficiency Score in Level 1 on the Prose, Document, and Numeracy Scales	27
Percentage of U.S. Adults (Age 16 to 65) Who Participated in Adult Education and Training During the Past 12 Months, by Document Proficiency Level	28
Estimated Differences Between the Mean Scale Scores of U.S. Adults in Selected Educational Groups on the Prose and Quantitative Scale, 2003 National Assessment of Adult Literacy (NAAL)	29
The Estimated Median Percentile Ranking of Adult Education Program Participants on the National Test Score Distribution for All Adults (16-65) by Literacy Scale	30

FOREWORD

Forces Changing Our Nation's Future was developed by labor economist Andrew Sum, Director of the Center for Labor Market Studies at Northeastern University, to help inform the deliberations of the National Commission on Adult Literacy. It was delivered to the Commission on April 17, 2007 as a Power Point presentation.

The Commission wishes to thank Dr. Sum, a member of the National Commission, for his contribution to its work. His paper will challenge the thinking of all who plan and provide adult education and literacy services and workforce preparation programs. Although its publication does not necessarily reflect conclusions of the Commission, we are pleased to make it available as a public service.

Two other resource documents developed for the April 17th meeting were recently made available: *Dare to Dream*, a paper in which 102 education and literacy leaders offer their thoughts on future priorities, strategies, and issues for substantially advancing and redirecting adult education and literacy in America; and *Mounting Pressures Facing the U.S. Workforce and the Increasing Need for Adult Education and Literacy*, prepared by executives of the National Center for Higher Education Management Systems. (Both documents are available at the CAAL web site, www.caalusa.org.) A final April 17th talk by Marc Tucker, president of the National Center for Education and the Economy, will be available soon in DVD format.

A current listing of commissioners and honorary commissioners of the National Commission on Adult Literacy is given on the next page.



Cheryl King
Study Director
National Commission
on Adult Literacy

David Perdue
Commission Chair
& President & CEO
Dollar General Corporation

Gail Spangenberg
Project Manager
& President, Council for
Advancement of Adult Literacy

The Commission is managed by the Council for Advancement of Adult Literacy (1221 Avenue of the Americas – 46th Floor, New York, NY 10020, gspangenberg@caalusa.org). Commission study director Cheryl King operates from a CAAL office in Kentucky (National Commission on Adult Literacy, c/o Council for Advancement of Adult Literacy, 115 East 2nd Street, Suite 310, Owensboro, KY 42303, cherylking@caalusa.org). The Commission's principle funders to date are The Dollar General Corporation, Harold W. McGraw, Jr., and The McGraw-Hill Companies, Inc.

This publication may be used with attribution. It is available at www.caalusa.org at no cost or may be purchased in bound form directly from CAAL (\$25 plus postage, for ordering instructions bheitner@caalusa.org).

Published and copyrighted © by the Council for Advancement of Adult Literacy.

NATIONAL COMMISSION ON ADULT LITERACY

David Perdue – Chairman and CEO, Dollar General Corporation (Commission Chair).

Morton Bahr – President Emeritus, Communications Workers of America.

Hon. Gerald Baliles – Director, The Miller Center of Public Affairs, University of Virginia; former governor of Virginia.

Bob Bickerton – Senior Associate Commissioner of Education for the Commonwealth of Massachusetts; Past President National Council of State Directors of Adult Basic Education.

Sherrie Claiborne – Chair, Public Policy, Commission on Adult Basic Education (COABE), and past president; COABE representative to and president of National Coalition for Literacy.

Marion Crain – Director, Center on Poverty, Work, and Opportunity, University of North Carolina.

John Comings – Director, National Center for the Study of Adult Learning and Literacy, Graduate School of Education, Harvard University.

Sharon Darling – President and Founder, National Center for Family Literacy.

Samuel Halperin – Senior Fellow & Founder, American Youth Policy Forum and Institute for Educational Leadership; Director of William T. Grant Foundation studies of non-college-bound youth, “The Forgotten Half.”

Paul Harrington – President and CEO, Reebok International, Ltd.

George Kessinger – President and CEO, Goodwill Industries International, Inc.

Cheryl D. King (Study Director) – Former Deputy Secretary and Commissioner of Adult Education and Workforce Development in Kentucky

Bridget Lamont – Vice Chair, U.S. National Commission on Libraries and Information Science; Past Chair and current member, Illinois Educational Labor Relations Board.

Hon. Ray Marshall – Rapoport Centennial Chair in Economics and Public Affairs, University of Texas (Austin); U.S. Secretary of Labor (Carter); Member, National Skills Standards Board and Advisory Commission on Labor Diplomacy (Clinton); Co-chair, Commission on Skills of the American Workforce and of Commission on Skills of the American Workforce in a Global Economy.

Gail Mellow – President, LaGuardia Community College; On many national higher education boards and commissions; Gubernatorial appointee to New Jersey State Employment and Training Commission; Member, New Jersey Commission on Higher Education and Technology.

Owen Modeland – President, Correctional Education Association (incoming); Superintendent of Schools, Oklahoma Department of Corrections.

Mark Musick – James Quillen Chair, East Tennessee State University; President Emeritus, Southern Regional Education Board (SREB); Chaired Board of National Assessment of Educational Progress under three presidents.

Karen Narasaki - President, Asian American Justice Center; Vice Chair Leadership Conference on Civil Rights; Vice President of Coalition for Comprehensive Immigration Reform; Recipient of award of the Chair of the Congressional Black Caucus.

Juan Olivarez – President, Grand Rapids Community College; member, Board of National Institute for Literacy, Member Kent and Allegan (MI) Workforce Development Boards; Gov. Jennifer Graham appointee to Cherry Commission of Higher Education and Economic Growth.

Cam Preus-Braly – Commissioner, Oregon Department of Community Colleges and Workforce Development; President, National Council on State Directors of Community Colleges; Chair-elect Western Interstate Commission on Higher Education.

Hon. Tom Sawyer – Former member, U.S. House of Representatives (OH); Author, National Literacy Act of 1991; Former Mayor, Akron, OH; Extensive Congressional role in tracking U.S. and world demographic trends and applying them to policy and program purposes.

Hon. George M. Staples – Director General of U.S. Foreign Service and Assistant Secretary for Human Resources, U.S. Department of State; Former political advisor to the Supreme Allied Commander Europe (SACEUR) at NATO in Belgium; Former U.S. ambassador to many countries.

Gail Spangenberg (Project Manager) – President and Founder, Council for Advancement of Adult Literacy; Former Operating Head, Business Council for Effective Literacy.

Andrew Sum – Professor of Labor Economics, Director of Center for Labor Market Studies, Northeastern University; National leader in labor market research related to adult literacy.

Robert Wedgeworth – President & CEO, ProLiteracy Worldwide; Former President, American Library Association; A leader in creating the National Coalition for Literacy in its original form.

William White – President and Chairman, Charles Stewart Mott Foundation; Leads Mott’s pioneering work in community education. Member, President Ronald Reagan’s Task Force on Private Sector Initiatives; Observer, Carter Center’s Delegation to the Palestinian Elections.

HONORARY COMMISSIONERS

David Baldacci – Author of 13 best-selling novels, translated into 38 languages and sold in more than 80 countries; Playwright; National ambassador for various charities, including the Barbara Bush Foundation for Family Literacy; Lawyer, trial and corporate law.

Alfredo G. de los Santos, Jr. – Distinguished Professor, Hispanic Research Center, Arizona State University; Recipient, Harold W. McGraw, Jr. Prize in Education; Board Member, Carnegie Foundation for Advancement of Teaching.

Hon. Ruth Ann Minner – Governor, State of Delaware.

Hon. Richard Riley – Partner, Nelson, Mullins, Riley, and Scarborough; former Secretary of Education (Clinton Administration); Former Governor, South Carolina; Recipient Harold W. McGraw Jr. Education Prize for national leadership.

Forces Changing Our Nation's Future

Author's Introduction & Executive Summary

This presentation is devoted to four main topics: (1) the comparative performance of U.S. adults and high school students on international literacy assessments; (2) the literacy/numeracy proficiencies of the nation's adults in different educational groups and among those who recently participated in federally-funded adult education programs; (3) the links between the literacy/numeracy proficiencies of U.S. adults and their labor market success; and (4) the projected outlook for the literacy proficiencies of U.S. adults in the absence of any sizable, sustained improvements in their existing proficiencies across age, racial, and ethnic groups.

A major portion of this presentation is based on research findings from a recent report, *The Perfect Storm*, on current U.S. literacy levels and the future outlook for the literacy and numeracy proficiencies of U.S. adults. This report was prepared by Irwin Kirsch, Andrew Sum, and two other ETS researchers and published by the Educational Testing Service (ETS) in March 2007.¹ Also used in this presentation are findings from a series of earlier ETS monographs on literacy issues, a comprehensive report on literacy in the labor force published by the National Center for Education Statistics in 1999, and a national assessment of the literacy and numeracy proficiencies of adult education learners.²

Key findings on each of the four topics indicated above are summarized below:

¹ See: Irwin Kirsch, Henry Braun, Kentaro Yamamoto, and Andrew Sum, *The Perfect Storm*, Policy Information Center, Educational Testing Service, Princeton, 2007.

² See: (i) Andrew Sum, *Literacy in the Labor Force*, National Center for Education Statistics, Washington, D.C., 1999; (ii) Andrew Sum, Irwin Kirsch, and Robert Taggart, *The Twin Challenges of Mediocrity and Inequality: Literacy in the U.S. from An International Perspective*, Policy Information Center, Educational Testing Service, Princeton, 2002; (iii) Andrew Sum, Irwin Kirsch, and Kentaro Yamamoto, *A Human Capital Concern: The Literacy Proficiency of U.S. Immigrants*, Policy Information Center, Educational Testing Service, Princeton, 2004; (iv) Andrew Sum, Irwin Kirsch, and Kentaro Yamamoto, *Pathways to Labor Market Success: The Literacy of U.S. Adults*, Policy Information Center, Educational Testing Service, Princeton, 2004; (v) Organisation for Economic Cooperation and Development, *Learning for a Living*, Paris, 2005.

A. U.S. Performance on International Literacy Assessments

Over the past decade, the U.S. has participated in a number of international literacy assessments of adults and teenaged high school students. U.S. performance on these international assessments has been mediocre and characterized by a relatively high degree of inequality. On the International Adult Literacy Survey (IALS) in the mid 1990s, U.S. adults (16-65) achieved a mean score above the average for adults in all 20 high-income countries combined on only one scale (prose). On the other three scales (document, quantitative, composite), there was no significant difference between the mean U.S. performance and the average performance for adults in all 20 countries. Mean scores of the U.S. typically ranked in the lower half of the distribution of mean literacy scores for these 20 high-income countries.

The distribution of composite literacy scores among U.S. adults on the IALS assessment was characterized by a relatively high degree of inequality. Our bottom 10 percent scored significantly below the average for their peers in other countries while the top 15 percent of performers in the U.S. ranked third highest among the high-income countries in the assessment. Gaps between the scores of U.S. adults at the top and bottom of the literacy distribution were among the highest in the world. Using the standard deviation of the test scores as a measure of dispersion, the U.S. ranked highest or second highest in inequality on each of the four literacy/quantitative scales.

In addition to the international assessments of adult literacy, there have been a series of international assessments of the reading, math, and science proficiencies of high school students. Among these surveys has been the Programme for International Student Assessment (PISA), which included an assessment of the reading proficiencies of 15-year-olds in 31 countries in 2000 and of the math proficiencies of 15-year-olds in 2003. In comparison to their peers in 21 other high- to middle-income countries participating in the 2000 reading assessment, the mean score of U.S. students was about average, with the nation ranking 14th highest among these 22 nations. The U.S. ranked high (4th highest) on two alternative measures of inequality, the

standard deviation and the test score gap between those youth at the 90th and 10th percentiles of the distribution.

On the 2003 international math assessment, the mean performance of U.S. students was significantly below the average for 15-year-olds in 23 high- to middle-income OECD countries. U.S. students ranked only 20th highest among these countries, with identical low rankings for men and women. Again, the U.S. ranked relatively high on measures of inequality in the math test score distribution.

The findings from international assessments over the past decade for both adults and high school students consistently reveal that U.S. performance is at best mediocre in comparison to their peers in other high- and middle-income countries and ranks among the highest in the degree of inequality in literacy and math skills. In 1983, the National Commission on Excellence in Education issued its report on the state of the nation's educational system. In their report, titled *Nation at Risk*, the Commission warned of a "rising tide of mediocrity that threatens our very future as a nation." The tide has come in.

B. The Literacy/Numeracy Proficiencies of U.S. Adults by Educational Attainment and the Literacy Deficits of Participants in Federally-Funded Adult Education Programs

The federal/state-funded network of adult education programs is designed to address the literacy/numeracy deficits and educational deficits of U.S. native-born adults and the literacy and the English-speaking deficits of adult immigrants. Findings from the 1992 National Adult Literacy Survey (NALS), the 1994 IALS, and the more recent 2003 National Assessment of Adult Literacy (NAAL) have consistently revealed very large gaps between the mean literacy and numeracy proficiencies of U.S. adults by educational attainment level. The 2003 NAAL assessment found that U.S. adults lacking a high school diploma or a GED certificate scored a full standard deviation below their peers with a high school diploma but no postsecondary schooling on both the prose and quantitative scales. At the same time, the gaps between the mean prose and quantitative scores of adults with a Bachelor's degree and high school graduates also were close to a full standard deviation. These very large differences in literacy and numeracy

proficiencies create substantial barriers to the educational and skills upgrading of less educated workers and underlie the widening gaps in earnings across educational groups of workers over the past few decades.

Immigrant adults on average score far below the native born on each literacy scale. In the 1994 IALS assessment, immigrant adults scored 1.0 to 1.1 standard deviations below the mean of native born adults on each literacy scale. A slight majority of the nation's immigrants fell into level one (the lowest proficiency level) on each literacy scale, including the composite literacy scale.³ Many of the nation's newest immigrant arrivals, especially those from Mexico, Central America, and South America, have both limited formal schooling and limited English-speaking skills. While limited English-speaking skills do not have any substantive effect on the ability of low-educated immigrants, especially males, to obtain employment, the negative earnings impacts of limited-English speaking skills increase with the level of education and work experience of immigrant workers.

Recent analyses of findings from the 2003 Adult Education Program Survey (AEPS) reveal that the typical learner in adult education programs has a very low level of prose and numeracy proficiencies. Approximately one-half of all adult learners in federally-funded adult education programs were in the lowest prose proficiency level, and two-thirds of them fell in the lowest level of the numeracy proficiency distribution. The mean scores of adult education learners on the prose and numeracy scales were .9 to 1.0 standard deviations below those of the entire U.S. adult population.⁴

³ The composite score for an individual is the simple average of his/her score on the prose, document, and quantitative scales.

⁴ Mean scores for the entire 16-65 year old adult population in the U.S. are based on the 2003 Adult Literacy and Learning assessment (ALL). For a review of the design features and purposes of this international literacy assessment, see: Organisation for Economic Cooperation and Development, Learning for a Living, Paris, 2005.

C. Literacy Proficiencies of U.S. Adults and Their Labor Market Success

National, regional, and state labor market research over the past decade has revealed the growing importance of a strong base of literacy and numeracy skills for success in U.S. labor markets.⁵ For native born workers, adults with stronger composite proficiencies are more likely to be attached to the labor market and to be employed. Results from the 2003 NAAL assessment indicate that U.S. adults (16+) with a “proficient level” of prose and quantitative skills were twice as likely to be employed full-time at the time of the survey as their peers with a “below basic” performance on these two scales.⁶

Higher prose and numeracy proficiencies are also associated with much higher probabilities of employed adults obtaining access to jobs in the higher skilled professional, managerial, and technical occupations. For example, findings of the 1992 NALS assessment revealed that only five percent of employed adults with a level 1 prose proficiency obtained access to such occupations versus 26 percent of the employed with a level 3 proficiency and 72 percent of those with a level 5 proficiency. For each educational attainment group, including those with a Bachelor’s or higher degree, the share of the employed with jobs in professional, technical, or management occupations rose steadily and strongly with their level of prose and quantitative proficiencies. Higher prose, quantitative, and composite proficiencies also are strongly associated with higher weekly and annual earnings among the employed, especially workers with bachelor and higher degrees.⁷

The mean annual earnings of immigrant workers in the U.S. also are strongly influenced by their levels of formal schooling, their literacy proficiencies, and their English-speaking skills. Among

⁵ For evidence on these issues at the state level, see: John Comings, Andrew Sum, and Johan Uvin, *New Skills for a New Economy*, Massachusetts Institute for a New Commonwealth, Boston, 2000.

⁶ The authors of the NAAL assessment classified the adult test takers into four proficiency levels on each scale, ranging from “below basic” to “proficient.”

⁷ Analyses of long-term findings from the 1979 National Longitudinal Survey of Youth indicate that the absolute and relative size of the earnings differences between college educated adults and high school graduates increase markedly as their reading and math scores increased as measured by their scores on the Armed Forces Qualification Test (AFQT).

employed immigrant adults (20-64 years old) with no formal schooling beyond the 12th grade in the U.S. in 2004, mean annual earnings rose steadily for each additional year of secondary schooling completed. Results were similar for both men and women. The mean annual earnings of employed high school graduates exceeded that for immigrant workers with fewer than 10 years of schooling by one-third. The mean annual earnings of immigrant workers with no more than a high school education also rose steadily and strongly with their self-reported level of English-speaking skills.

National and state evidence from the 2000 Census and the 2005 American Community Surveys shows that the adverse earnings effects of limited English-speaking skills tend to be greater for immigrants with high levels of formal schooling.⁸ College educated immigrants with limited English speaking skills are considerably less likely than their more proficient English-speaking peers to obtain jobs in professional, technical, managerial, and high level sales occupations.

The formal educational attainment and core literacy/ numeracy skills of U.S. workers also critically influence the likelihood that they will receive training from their employers, especially formal training (both on and off the job) that has larger and more persistent effects on their future wages. Findings of six survey rounds of the National Longitudinal Survey of Youth revealed that young adults (aged 21-33) with a high school diploma were nearly twice as likely as high school dropouts to have received some training from their employers, and four-year college graduates were nearly three times as likely to have received such training as high school dropouts. The mean amount of such training (in hours) was also considerably higher among the best-educated young adults.

The 2003 ALL survey also collected data on the receipt of employer-sponsored adult education or training by employed persons. The likelihood of receiving such training was estimated for groups of employed persons ranked by their level of literacy engagement at work. Those employed persons in the top quartile of the literacy engagement distribution were *11 times as likely* as those in the bottom quartile and five times as likely as those in the second lowest

⁸ For a review of evidence on this issue, see: John Comings, Andrew Sum, and Johan Uvin, *New Skills for a New Economy*.

quartile to have received such education or training from their employers.⁹ The relative size of the gap in training receipt between U.S. workers in the top and bottom quartiles of the literacy engagement distribution was the second highest among the 12 high income countries for which ALL data were available. The higher rates of receipt of training by the nation's best educated and most literate workers help generate the steeper age-earnings profiles that they face over their working lifetime. These steeper age-earnings profiles create ever widening earnings gaps between the most literate and less literate members of the nation's workforce.

D. The Future Outlook for Literacy Skills In the U.S. Adult Population

Given the growing importance of literacy and numeracy proficiencies for success in U.S. labor markets as well as in civic and social life, one might well ask whether the nation has been making any sustained progress in both boosting the literacy/ numeracy skills of its youth and its adult population. Findings from the National Assessment of Educational Progress on the reading and math skills of U.S. teens (13 to 17 years old) over the past 15 years have shown little progress in boosting average performance or reducing large gaps across race-ethnic and income groups of students.¹⁰ Comparisons of the recent results from the 2003 National Assessment of Adult Literacy with those from the 1992 NALS survey indicate no significant progress in increasing the prose or document skills of U.S. adults (16 and older) and only a modest degree of improvement in their quantitative proficiencies. The NAAL results also reveal very large differences in mean test score performance across educational and race-ethnic groups.

My own analysis of the NAAL test results by age group indicates very little differences in mean test score performance across age groups, except for those 65 and older whose mean scores are significantly below those under 65. The aging of the U.S. population by itself over the next decade will have *no* significant impact on the average literacy/numeracy proficiencies of the

⁹ See: Organisation for Economic Cooperation and Development, *Learning for a Living*.

¹⁰ For a review of recent trends in the reading, writing, and math skills of U.S. teens (13, 15, and 17-year-olds) based on the NAEP and PISA assessments, see: Andrew Sum, Tim Barnicle, Ishwar Khatiwada, and Joseph McLaughlin, *The Educational and Labor Market Experiences of the Nation's Young Adults Since the Publication of America's Choice*, Report Prepared for the National Center on Education and the Economy, New Skills Commission on the American Workforce, Washington D.C., 2006.

nation's non-elderly population -- i.e., those under 65. In fact, the mean prose and quantitative scores of young adults under 25 were below those 25-39 years of age on the NAAL assessment.

The continued existence of large race-ethnic differences in literacy/numeracy proficiencies among U.S. adults and the changing race-ethnic composition of the adult population do not bode well for changes in the overall mean scores of U.S. adults or the degree of inequality in the nation's literacy and numeracy distributions. Over the next few decades, the adult population will be comprised of a larger share of Hispanic, Black, and Asian adults. The especially high growth of the Hispanic adult population has been fueled by the largest increase in foreign immigration in our history. Unfortunately, a relatively very high share of Hispanic immigrants into the U.S. lack high school diplomas and possess limited English-speaking skills that yield very low average literacy and numeracy proficiencies.¹¹

To predict the future average level and distribution of literacy and quantitative skills of U.S. adults in 2030, a series of simulations were conducted. In the first simulation, the mean prose and quantitative scores of U.S. adults aged 16-65 in 1992 by race-ethnic group were used to estimate the mean scores that would prevail overall in 2030 by adjusting for projected changes in the race-ethnic composition of the adult population over this time period. The results of this simple simulation generate a 12 to 13 point decline in the mean prose and quantitative scores of the non-elderly population by 2030, a reduction equivalent to .2 standard deviations. A similar simulation exercise using the 2003 NAAL data yields a nearly identical decline in mean prose and quantitative scores between 10 and 11 points.

A more sophisticated simulation of the 2030 test score distributions by ETS research staff estimated changes in the entire distribution of literacy scores from projected changes in the distribution of the population by age and race-ethnic group through 2030.¹² The projected results are quite daunting. Under this simulation, the number of U.S. adults with literacy skills in levels

¹¹ The English-speaking skills of recent Hispanic immigrants are positively correlated with their educational attainment. The higher the level of schooling, the more likely they are to speak English well or very well.

¹² The findings of this last set of simulations are presented in *The Perfect Storm*.

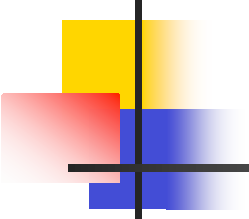
1 and 2 would rise sharply from 70 million to 119 million in 2030. The entire distribution of skills shifts to the left and also becomes more dispersed. The nation ends up with both poorer average performance and a higher degree of inequality. A wide array of labor market, educational, civic, social, and health problems would be linked to such a deterioration in average literacy skills and widening equality.¹³

¹³ For examples of such labor market, social, and civic problems, see: (i) Andrew Sum, Irwin Kirsch, and Kentaro Yamamoto, *Pathways to Labor Market Success*; (ii) Andrew Sum, Irwin Kirsch, and Kentaro Yamamoto, *A Human Capital Concern: The Literacy Proficiencies of U.S. Immigrants*; (iii) Gordon Berlin and Andrew Sum, *Toward A More Perfect Union: Basic Skills, Poor Families, and Our Economic Future*, Ford Foundation, New York, 1985; (iv) Organisation for Economic Cooperation and Development, *Learning for a Living*.



Three Forces Are Changing Our Nation's Future

- Inadequate literacy and numeracy skills among large segments of our student and adult populations
- An ongoing shift in the demographic profile of our population, powered by the highest immigration rates in nearly a century
- The continuing evolution of the economy and the nation's job structure, requiring higher levels of skills from an increasing proportion of workers



Range of Scale Scores
Corresponding to Each Literacy Level on the
International Adult Literacy Survey (IALS)

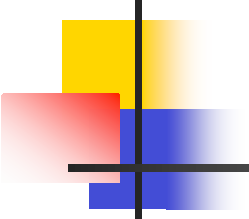
Level	Score Range
1	0-225
2	226-275
3	276-325
4	326-375
5	376-500

Comparisons of the Weighted Mean Scores of Adults in the U.S. and All High-Income Countries on the Prose, Document, Quantitative and Composite Scales, and the U.S. Rank Among the 20 High Income IALS Countries

	(A)	(B)	(C)	(D)	(E)
Scale	U.S.	All High Income Countries	Differences (A-B)	Sig. of Differences	U.S. Rank
Prose	273	267	+6	.01	9 th
Document	267	267	0	Not Sig.	14 th
Quantitative	274	272	+2	Not Sig.	13 th
Composite	272	270	+2	Not Sig.	12 th

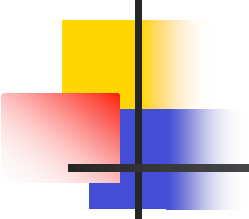
Comparisons of the Mean Composite Scores at Selected Percentiles of the Composite Score Distribution, U.S. and All 17 High-Income Countries in the IALS Assessment

	(A)	(B)	(C)	(D)	(E)
Score Percentile	U.S.	All High-Income Countries	Differences (A-B)	Sig. of Differences	U.S. Rank Among 17 Countries
Mean	272	270	+2	Not Sig.	10 th
5 th	133	142	-9	Sig. .02	15 th
10 th	176	185	-9	Sig. .05	15 th
15 th	208	209	-1	Not Sig.	12 th
20 th	222	224	-2	Not Sig.	11 th
30 th	247	247	0	Not Sig.	11 th
50 th	283	279	+4	Not Sig.	10 th
60 th	297	292	+5	Not Sig.	8 th
80 th	328	321	+7	Sig. .01	5 th
85 th	337	330	+7	Sig. .01	3 rd
90 th	349	342	+7	Sig. .02	3 rd

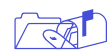


Standard Deviations of the Scores of U.S. Adults on Each Literacy Scale and Their Rank Among the 20 High-Income IALS Countries

	(A)	(B)
Literacy Scale	Standard Deviation	U.S. Rank
Prose	68	1 st
Document	70	2 nd (Tie)
Quantitative	69	2 nd
Composite	68	1 st



U.S. Students' (15 Years Old) Performance in Reading and Math on the Programme for International Student Assessment (PISA), 2000 and 2002



In 2000, the PISA reading assessment was administered to samples of 15 year olds in 27 OECD countries and four non-OECD countries (Brazil, Latvia, Russian Federation).

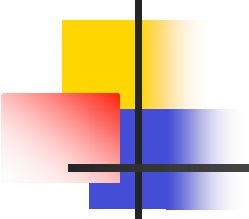
- We compared the mean scores, standard deviation, and size of differences in test score performance on the combined reading literacy scale of U.S. students with their peers in 21 other middle to high income countries; OECD mean = 500, S.D. = 100



U.S. Performance Among 22 Countries

Mean Score	504
Rank	Tied 14 th
Standard Deviation	105
Rank	4 th highest
90 th – 10 th percentile gap	273 points
Rank	4 th highest

Source: OECD, [Reading for Change: Performance and Engagement Across Countries.](#)

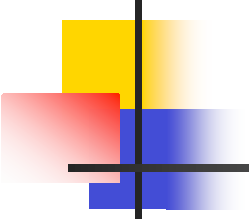


U.S. Students' Performance on the Math Assessment in 2003 Among 23 High to Middle Income OECD Countries

	All	Men	Women
Mean Score	483	486	480
Rank	20 th	20 th	20 th

Standard Deviation	95
Rank (tied)	7 th highest (tied)
90 th -10 th percentile gap	251
Rank	6 th highest

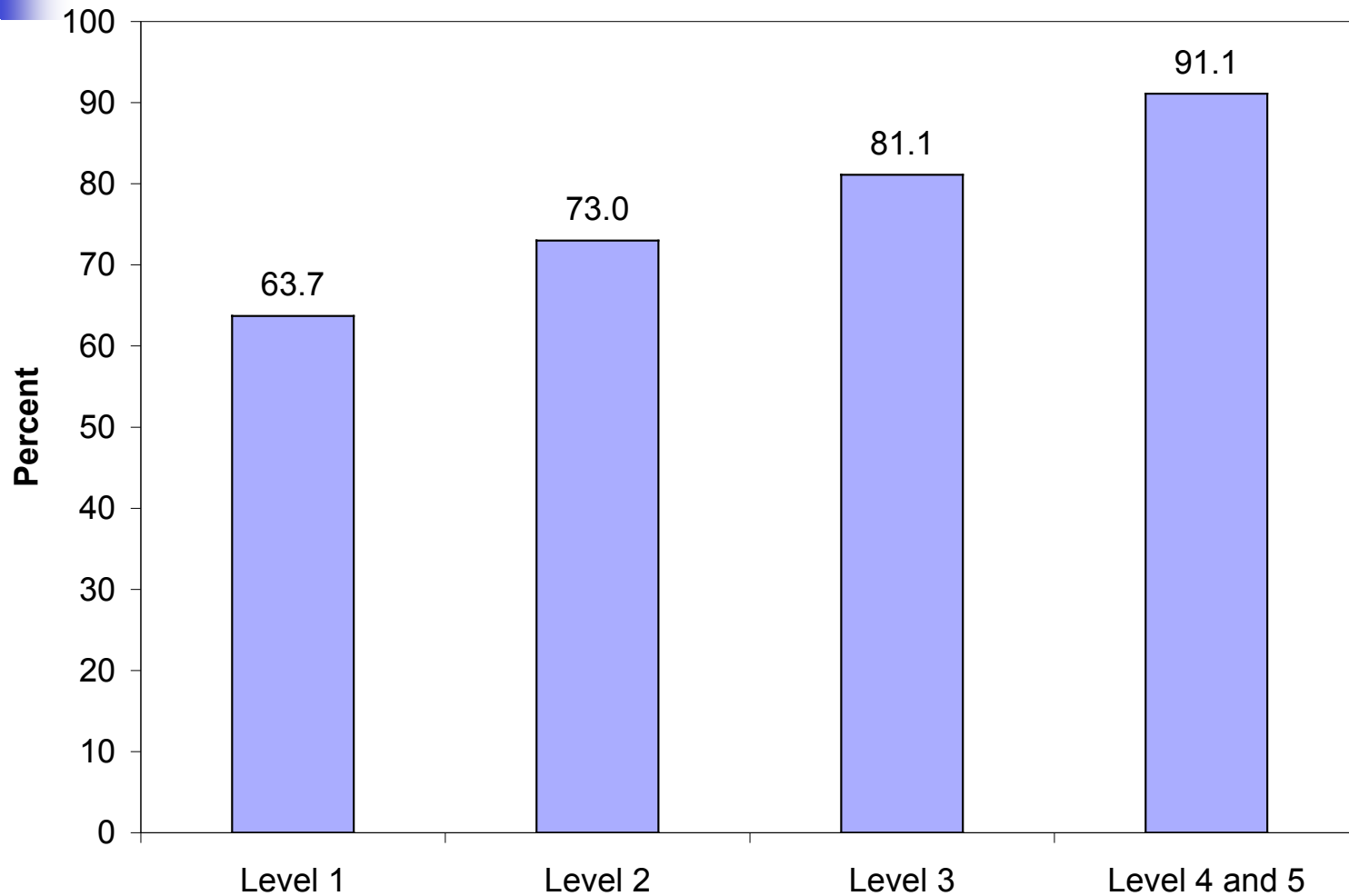
Source: OECD, Learning for Tomorrow's World: First Results from PISA, 2003.



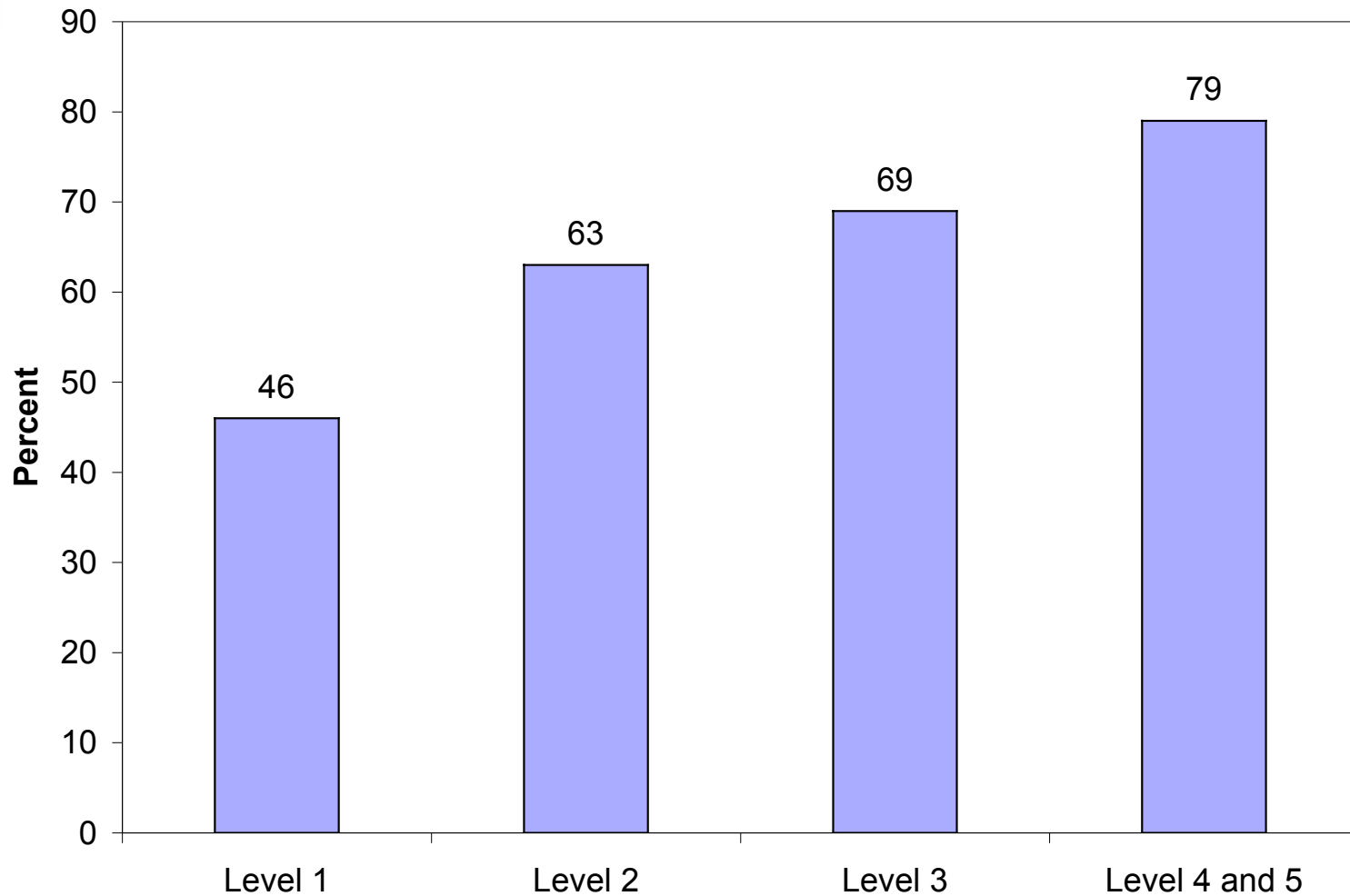
Mean Scores of U.S. Adults (16+)
on the Prose and Quantitative Scales by
Age Group, 2003 NAAL Assessment

	(A)	(B)
Age Group	Prose	Quantitative
16 – 18	267	267
19 – 24	276	279
25 – 39	283	292
40 – 49	282	289
50 –64	278	289
65+	248	257

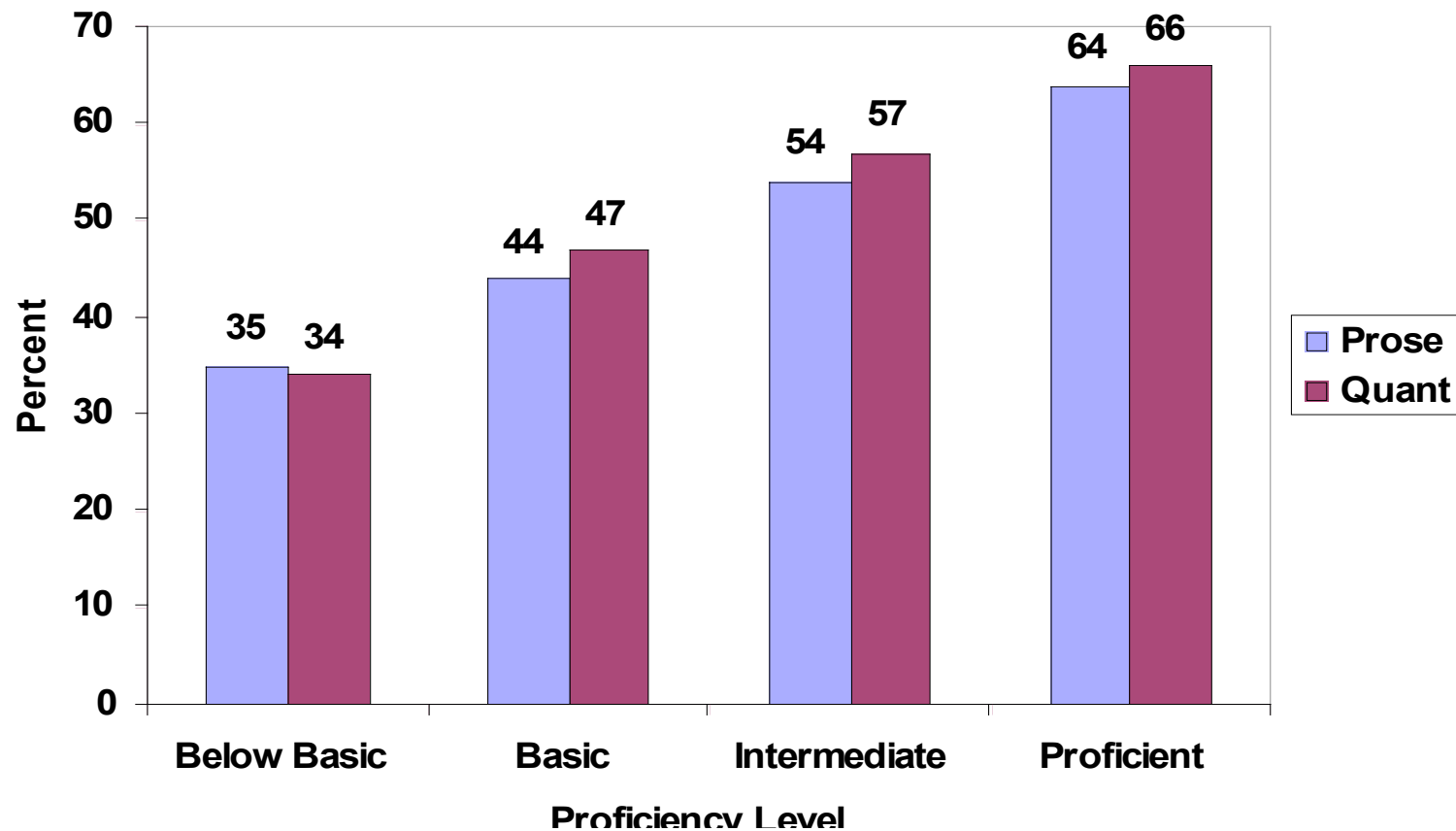
Employment Rates of U.S. Men (Age 16 to 65), by Prose Proficiency Level



Employment Rates of U.S. Women (Age 16 to 65), by Composite Proficiency Level

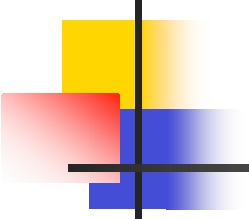


Percent of U.S. Adults (16+) Employed Full-Time in 2003 by Their Proficiency Level on the NAAL Prose and Quantitative Scales



Percentage of Employed U.S. Adults (Age 16 and Older)
with Specified Educational Attainment and Prose
Proficiency Levels Who Were Able to Obtain Employment
in Professional, Managerial or Technical Occupations

Educational Attainment	Level 1	Level 2	Level 3	Level 4	Level 5	Overall
0 to 8 years	2	6	6	39	--	3
9 to 12 years, no diploma	3	7	6	11	--	4
H.S. diploma or GED	6	9	10	12	15	9
Some postsecondary, no degree	9	17	21	29	44	22
Two-year degree	28	29	37	43	40	38
Four-year degree or higher	46	56	64	75	83	71
All workers	5	14	26	50	72	27

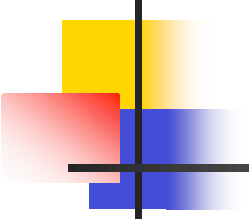


The Size of the Gaps Between the Mean Document Proficiencies of U.S. Managers/Professionals and Other Occupational Groups, in Absolute Differences and in Standard Deviations Units

Occupational Group	Size of Gap	Gap in Standard Deviation Units
Technical & associated professionals	5	.10
Clerical & administrative support	25	.47
Service & lower level sales	47	.91
Craft workers	66	1.27
Assemblers and operatives	72	1.38
Laborers & farm/forestry/fishing workers	53	1.02

Training Experiences of Young Adults in the U.S., by Educational Attainment, 1986-1991
(Numbers in Percent)

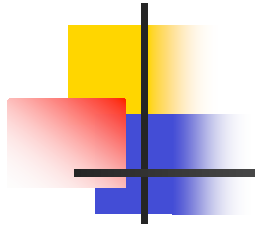
Educational Attainment	(A)	(B)
	Any Training Between 1986-91	Work for Firm Where Training Was Provided, 1991
All	38.0	--
0-11 Years	18.9	28.0
12 Years	33.5	45.0
13-15 Years	44.5	58.0
16 or More Years	50.1	68.0



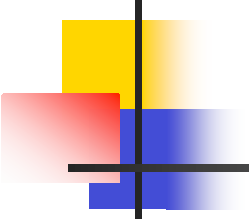
Odds of U.S. Employed Adults (Age 16 to 65) Receiving
Some Employer-Sponsored Adult Education or Training
at Work, by Level of Literacy Engagement at Work
(Odds Ratio = 1 for Lowest Quartile)

Quartile of Literacy Engagement	Odds Ratio for Employer-Sponsored Education or Training	Rank Among 12 High-Income Counties
4 th (top)	11.4	2 nd highest
3 rd	6.3	5 th highest
2 nd	2.3	3 rd lowest
1 st (bottom)	1.0	

Mean Annual Earnings of Employed
20-64 Year Old Immigrant Workers with 12 or
Fewer Years of Schooling by Educational
Attainment, Total and by Gender, U.S., 2004



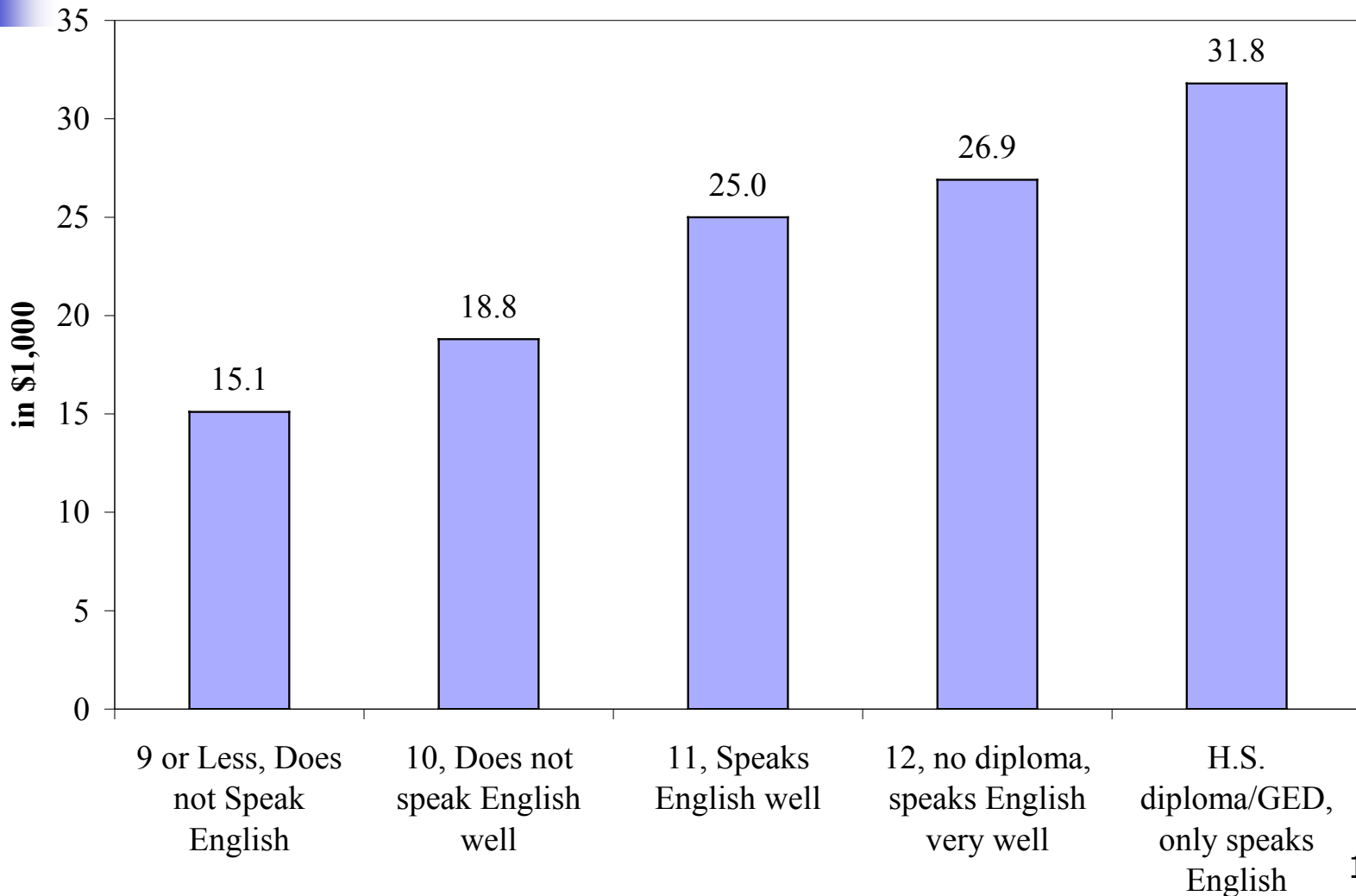
	(A)	(B)	(C)
Educational Attainment	All	Men	Women
<10 years	\$19,679	\$22,474	\$13,898
10 years	21,972	25,150	16,281
11 years	22,558	26,065	16,790
12 years	24,078	27,539	18,246
H.S. diploma/GED	26,347	30,243	20,682
All	23,165	26,327	17,757



Mean Annual Earnings of 20-64 Year Old Employed Immigrant Workers With 12 or Fewer Years of Schooling

	(A)	(B)	(C)
English-Speaking Proficiency	All	Men	Women
Only speaks English	\$29,255	\$34,042	\$23,255
Speaks English very well	28,243	32,518	22,091
Speaks English well	25,575	28,945	19,050
Does not speak English well	23,161	22,940	15,002
Does not speak English	15,774	18,149	11,755
Only speaks English as % of does not speak English	185	188	198

Mean Annual Earnings of 20-64 Year Old
Employed Immigrant Workers in Selected Educational
Attainment/English-Speaking Proficiency Groups,
U.S.: 2004 (in \$1,000)





What might the future look like?

Predicted Prose and Quantitative Scores for 16-65
Year Old Adults in the U.S. in 2030, Assuming 1992
NALS Mean Prose and Quantitative Scores of
Each Race/Ethnic Group are Maintained in 2030

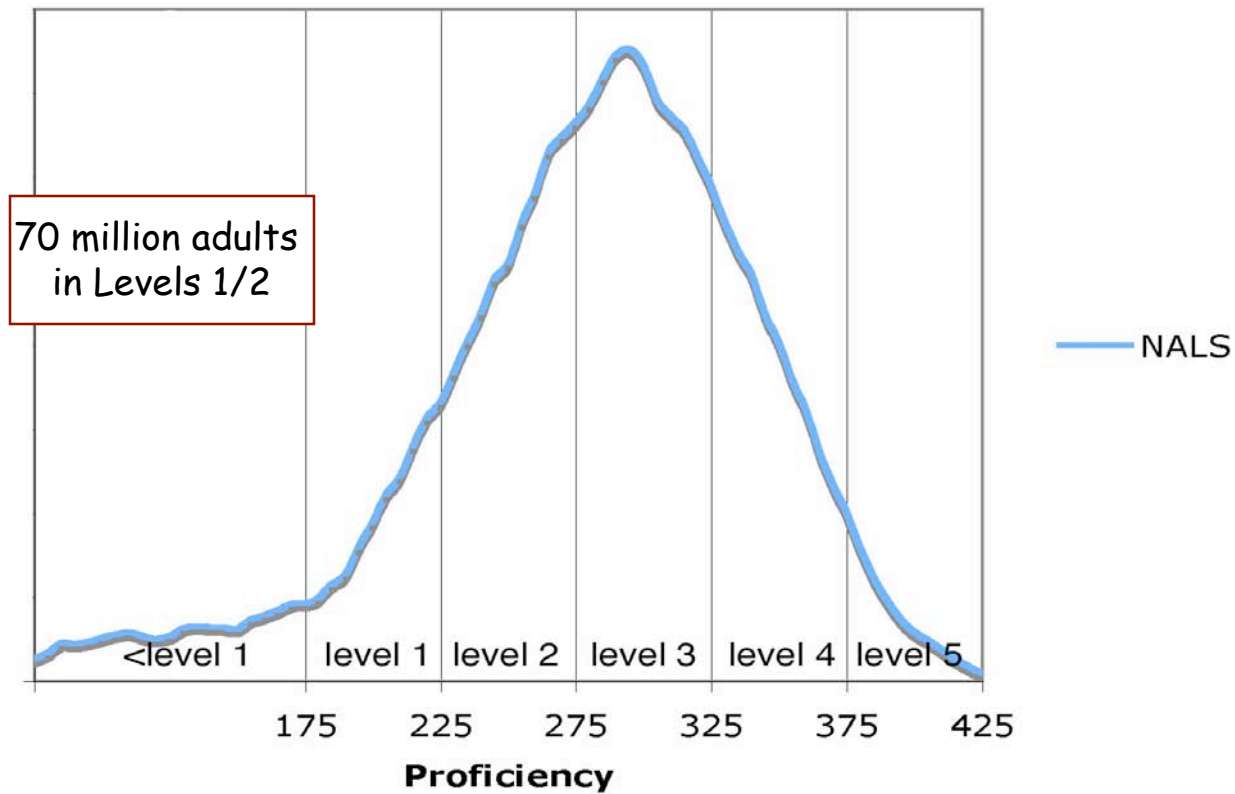
	(A)	(B)	(C)
Race/Ethnic Group	Mean Prose Scale Score	Share of Population in 2030	Weighted Prose Score
Asian	252	.067	16.88
Black	243	.143	34.75
Hispanic	219	.207	45.33
Other	254	.038	9.65
White	295	.545	160.77
All	280	1.000	267.4

	(A)	(B)	(C)
Race/Ethnic Group	Mean Quantitative Scale Score	Share of Population in 2030	Weighted Quantitative Score
Asian	271	.067	18.16
Black	231	.143	33.03
Hispanic	217	.207	44.92
Other	249	.038	9.46
White	296	.545	161.32
All	279	1.000	266.9

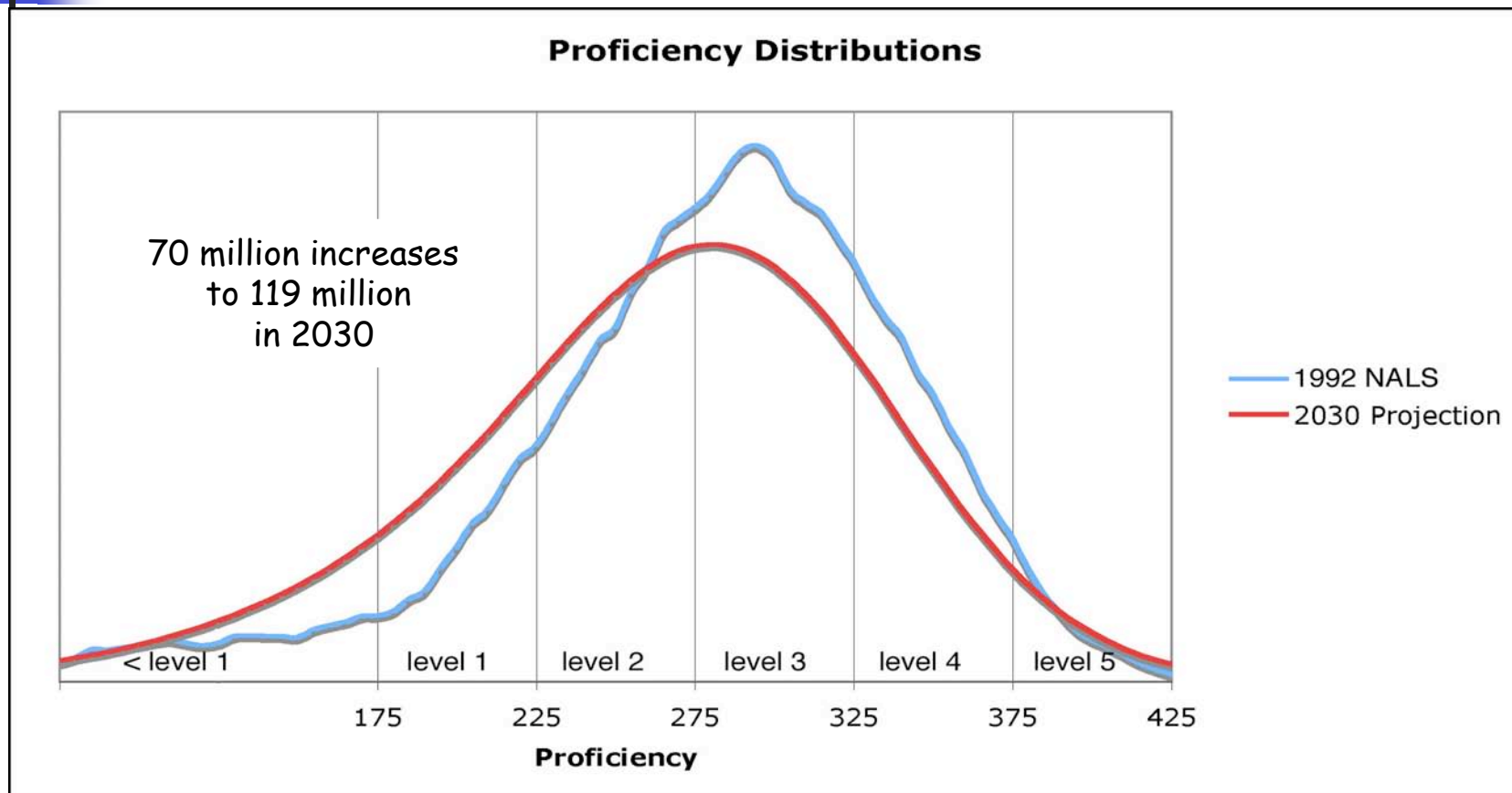
The Mean Prose and Quantitative Scale Scores of U.S. Adults (16+) in 2003 by Race-Ethnic Group and Projected to 2030 (NAAL Results)

Scale/Race-Ethnic Group	(A) 2003 Mean Score	(B) % of 16-64 Population in 2003	(C) Contribution to Score in 2030
Prose			
• Asian	271	.067	18.2
• Black	243	.143	34.7
• Hispanic	216	.207	44.7
• White, not Hispanic	288	.545	157.0
• Other ⁽¹⁾	243	.038	9.2
• All Races Combined	275	1.000	263.8
Quantitative			
• Asian	285	.067	19.1
• Black	238	.143	34.0
• Hispanic	233	.207	48.2
• White, not Hispanic	297	.545	161.9
• Other ⁽¹⁾	252	.038	9.6
• All Races Combined	283	1.000	272.8

Distribution of Literacy Scores Found in the National Adult Literacy Survey (1992)



Average literacy scores are expected to decline between 1992 and 2030, with an increase in the amount of inequality.



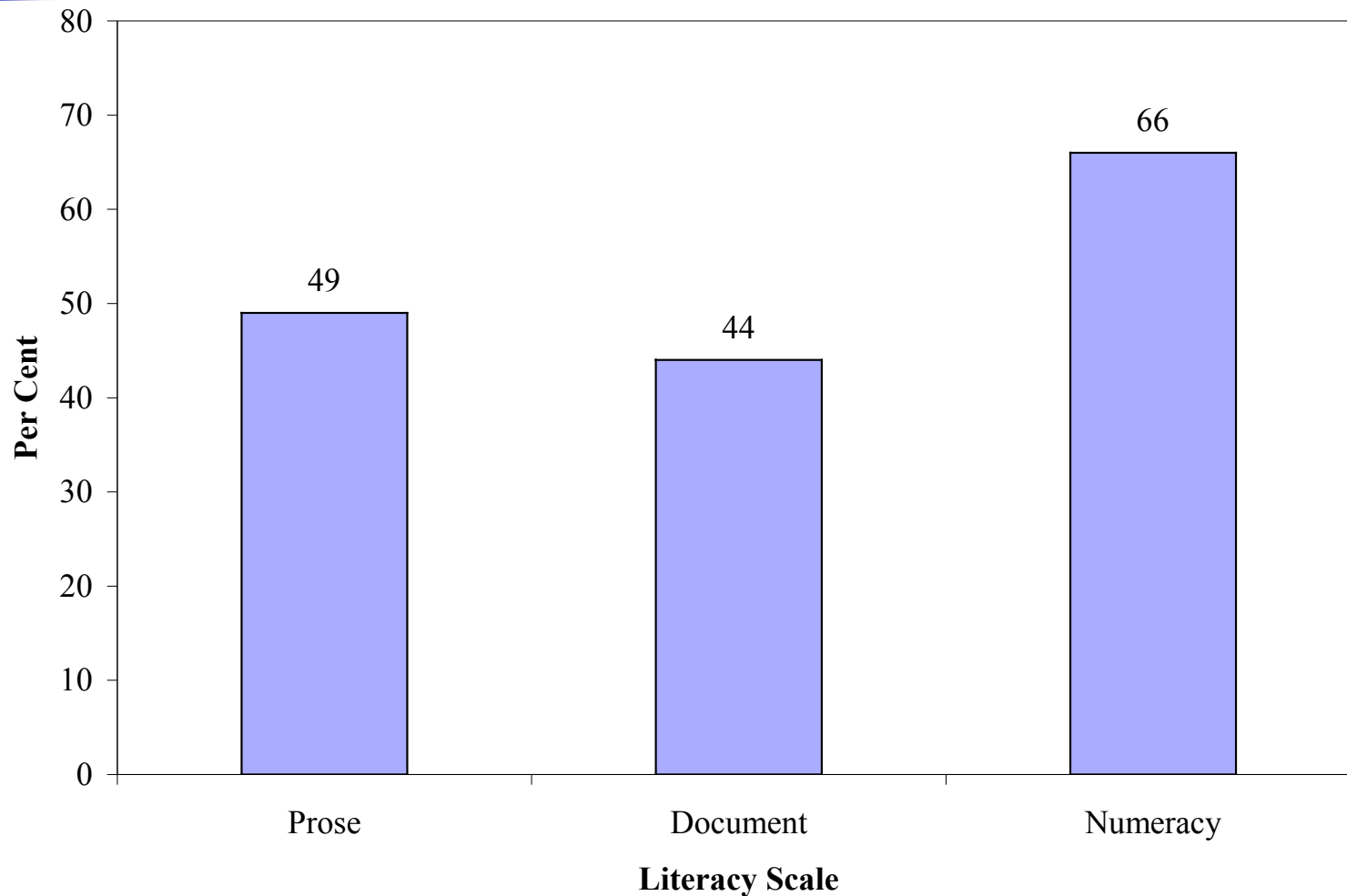
Comparisons of the Percentage Distribution Across Proficiency Levels and Mean Scores of the U.S. Adult Population (16-65) and the Pool of Participants in Adult Basic Education Programs on the Prose Scale

Group	(A)	(B)	(C)	(D)	(E)	Mean Prose Score
	Level 1	Level 2	Level 3	Levels 4 and 5		
U.S. Adult Population	20	32	35	13		269
Adult Education Program Participants	49	36	14	1		219
Adult Education – U.S. Adults	+29	+4	-21	-12		-50

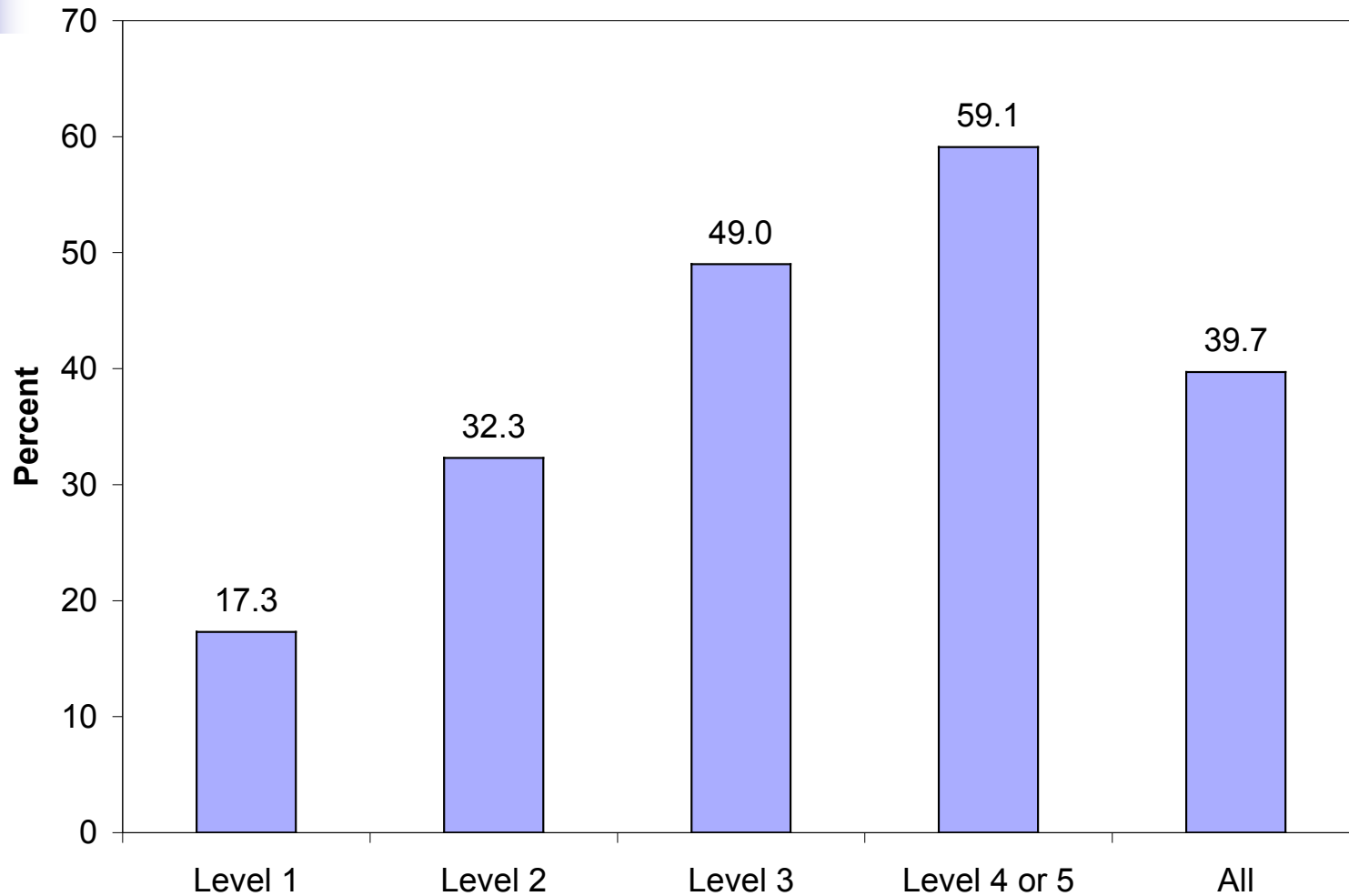
Comparisons of the Percentage Distribution Across Literacy Levels and Mean Scores of the U.S. Adult Population (16-65) and the Pool of Participants in Adult Basic Education Programs on the Numeracy Scale

Group	(A)	(B)	(C)	(D)	(E)
	Level 1	Level 2	Level 3	Levels 4 and 5	Mean Numeracy Score
U.S. Adult Population	27	32	19	13	261
Adult Education Program Participants	66	25	8	1	203
Adult Education – U.S. Adults	+39	-7	-21	-12	-58

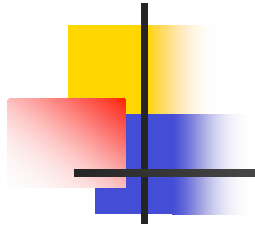
The Per Cent of Adult Education Learners with a Proficiency Score in Level 1 on the Prose, Document, and Numeracy Scales



Percentage of U.S. Adults (Age 16 to 65) Who Participated in Adult Education and Training During the Past 12 Months, by Document Proficiency Level



Estimated Differences Between the Mean Scale Scores of U.S. Adults in Selected Educational Groups on the Prose and Quantitative Scale, 2003 National Assessment of Adult Literacy (NAAL)



Literacy Scale/ Educational Groups	(A) Difference in Mean Scale Scores	(B) Difference in Standard Deviation Units ⁽¹⁾
Prose		
• High school graduate vs. persons lacking a diploma/GED ⁽²⁾	55	1.02 SD
• Associate degree vs. high school graduate	36	.67 SD
• Bachelor degree vs. high school graduate	52	.96 SD
Quantitative		
• High school graduate vs. persons lacking a diploma/GED ⁽²⁾	58	1.02 SD
• Associate degree vs. high school graduate	36	.63 SD
• Bachelor degree vs. high school graduate	54	.95 SD

The Estimated Median Percentile Ranking of Adult Education Program Participants on the National Test Score Distribution for All Adults (16-65) by Literacy Scale

