THE COSTS AND BENEFITS OF EARLY CHILDHOOD INTERVENTIONS

PREPARED STATEMENT OF LYNN A. KAROLY*

Around the beginning of 1997, RAND was approached by the "I Am Your Child" Early Childhood Public Engagement Campaign to conduct an independent, objective review of the scientific evidence available on early childhood interventions. "Early childhood interventions" were defined as attempts by government agencies or other organizations to improve child health and development, educational attainment, and economic well-being. The aim was to quantify the benefits of these programs to children, their parents, and society at large. Funding for the project was secured from The California Wellness Foundation.

My testimony today draws on the results of our study titled *Investing in Our Children: What We Know and Don't Know about the Costs and Benefits of Early Childhood Interventions*. The research was conducted by an interdisciplinary research team from RAND's Criminal Justice Program and Labor and Population Program including two economists, a criminologist, two mathematical modelers, and a developmental pediatrician.

Introduction

Over the last year or so, there has been a renewed interest in the influence of early childhood—especially the first 3 years of life—on child health and development, educational attainment, and economic well-being. Public attention has been stimulated by television shows and stories in national news magazines, and governors and legislators have been initiating programs to direct budgetary surpluses to services for young children. Much of this activity has been given impetus by research findings that the great majority of physical brain development occurs by the age of three. These findings have been interpreted to suggest that early childhood furnishes a window of opportunity for enriching input and a window of vulnerability to such social stressors as poverty and dysfunctional home environments. The response has been an attempt to promote healthy child development, particularly among disadvantaged children, with home visits by nurses, parent training, preschool, and other programs.

It is unclear what will happen to these programs once the media spotlight moves on and budgets tighten. Perhaps a public clamor over the next hot issue will draw funds away from early childhood programs; perhaps it should. The current period of relative largesse provides the opportunity not only to initiate programs but to undertake the kind of rational evaluation of those programs that will help clarify the choices that must eventually be made. In our recent study, *Investing in Our Children*, we assemble the evidence now available on early childhood interventions to try to answer two questions that will be of interest to policymakers who must allocate resources and to the public who provides those resources:

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* Senior Economist and Director, Labor and Population Program, RAND, Santa Monica, California. This testimony is based on the RAND study: Lynn A. Karoly, Peter W. Greenwood, Susan S. Everingham, Jill Houbé, Rebecca Kilburn, C. Peter Rydell, Matthew Sanders and Jim Chiesa, *Investing in Our Children: What We Know and Don't Know about the Costs and Benefits of Early Childhood Interventions*, MR-898, Santa Monica, California: The RAND Corporation, 1998 (ISBN 0-8330-2530-9). Full text available at http://www.rand.org/publications/MR/MR898/MR898.feature/. The views presented here do not necessarily represent those of RAND or RAND's research sponsors.

- *Do early interventions targeted at disadvantaged children benefit participating children and their families?* After critically reviewing the literature and discounting claims that are not rigorously demonstrated, we conclude that these programs can provide significant benefits.

- *Might government funds invested early in the lives of some children result in compensating decreases in government expenditures?* Here, we examine the possibility that early interventions may save some children (and their parents) from placing burdens on the state in terms of welfare, criminal justice, and other costs. Again, after updating and refining earlier estimates, we find that, at least for some disadvantaged children and their families, the answer to this question is yes.

We use words like "can" and "might" deliberately. We cannot freely generalize these conclusions to all kinds of targeted early interventions, especially not to large-scale programs, because of various limitations in the evidence collected to date. We pay special attention in our analysis to these limitations, which have important implications for future initiatives. In particular, these limitations suggest that better evaluations of new and continuing intervention efforts would be of great value to future decisionmaking.

What Are the Benefits?

The term "early intervention" can be broadly applied. It can be used for services generally available to and needed by many children, such as immunizations and child care, and to programs not specifically aimed at children, such as Food Stamps and Medicaid. In *Investing in Our Children*, we restrict its application to programs targeted to overcome the cognitive, emotional, and resource limitations that may characterize the environments of disadvantaged children during the first several years of life.

Even the term "targeted early intervention" is a broad concept. It covers programs concerned with low-birthweight babies and those concerned with toddlers in low-income families; interventions targeting children as well as those targeting their mothers; services offered in homes and those offered in centers; programs aimed at improving educational achievement and those aimed at improving health; and services as diverse as parent skills training, child health screening, child-abuse recognition, and social-services referral.

This diversity makes it impossible to draw overall generalizations about "targeted early intervention" and limits us to inferences as to what some programs can do, depending on the characteristics of the program and the families it serves. Furthermore, given the shortcomings and limitations in the design of many early intervention evaluations and the measures omitted from them, what we don't know about the effects of early childhood intervention may exceed what we know (more on this appears below). Nonetheless, our review supports the proposition that, in some situations, carefully targeted early childhood interventions can yield measurable benefits in the short run and that some of those benefits persist long after the program has ended.

We reached that conclusion after examining a set of nine programs in which evaluations had been performed that assessed developmental indicators, educational achievement, economic well-being, and health for program participants and compared them with the same measures for matched controls. In most of the programs, controls were selected by random assignment at program outset. We also sought programs with participant and control groups large enough at program implementation and follow-up to ensure unbiased results, although resource limitations on these programs did not always permit that.

Figure 1 schematically summarizes the results of our review of the effects of these programs on participating children.[1] The filled squares show which of a number of developmental, educational, economic, and health indicators were measured for each program reviewed. Dark gray indicates a favorable (and statistically significant) result, and black indicates no statistically significant result; light gray denotes mixed findings.[2] As the figure shows, each program favorably affected at least one indicator, and most of them affected several (that is, participants had better outcomes on these indicators than did children in the control group).[3] Although many studies did not find favorable outcomes across the full range of effects they examined (especially in the long run), favorable effects dominate. A companion analysis of program effects on mothers also showed that measured results tended to be favorable, although the ratio of favorable to null results across all programs was not as high.

The programs thus led variously to the following advantages for program participants relative to those in the control group:

- Gains in emotional or cognitive development for the child, typically in the short run, or improved parent-child relationships.
- Improvements in educational process and outcomes for the child.
- Increased economic self-sufficiency, initially for the parent and later for the child, through greater labor force participation, higher income, and lower welfare usage.
- Reduced levels of criminal activity.
- Improvements in health-related indicators, such as child abuse, maternal reproductive health, and maternal substance abuse.

While many significant differences between participants and controls were found, a statistically significant difference is not necessarily an important one. The size of the difference also needs to be taken into account—and the size of many of the differences could be fairly characterized as substantial. For example, the Early Training Project, Perry Preschool, and the Infant Health and

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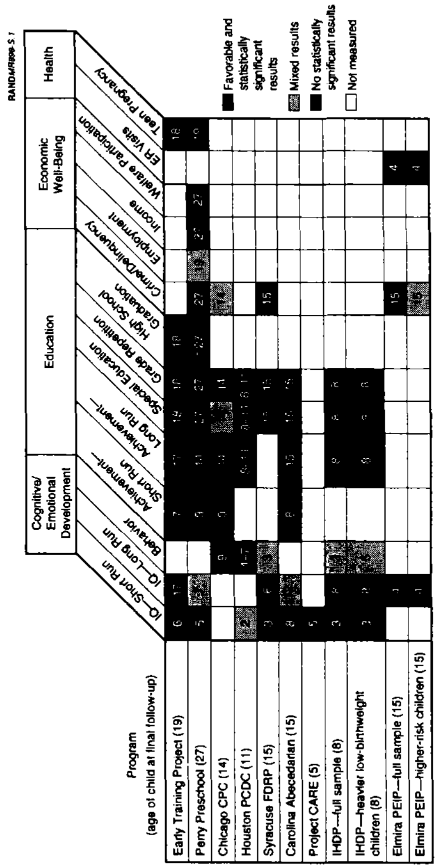
[1] The nine programs are the Early Training Project, Perry Preschool, Chicago Child-Parent Center (CPC), Houston Parent-Child Development Center (PCDC), Syracuse Family Development Research Program (FDRP), Carolina Abecedarian, Project CARE (Carolina Approach to Responsive Education), Infant Health and Development Project (IHDP), and Elmira (New York) Prenatal/Early Infancy Project (PEIP). We also review Project Head Start, but results are not summarized in Figure 1 because there are multiple evaluations that cannot be readily summarized.

[2] A favorable result may be either an increase or decrease in an indicator among program participants relative to controls—depending on the indicator. For example, while a favorable result for IQ means that the IQ was higher for treatment children compared with controls, a favorable result for criminal behavior occurs when the incidence is lower for the treatment group.

[3] In addition, in most cases even when results were not statistically significant (black in the figure), the difference between treatment and control groups was in the expected direction for the program to produce beneficial results.

Written Testimony of Lynn A. Karoly



SOURCE: See Table 2.2 in *Investing in Our Children.*

NOTE: Number in box refers to age of child when measure was last taken. When results were mixed (light gray squares), the age refers to the last age when the effect was significant. See text note for full program names.

Figure 1—Effects of Selected Early Intervention Programs on Participating Children

Development Project (IHDP) found IQ differences between treatment participants and controls at the end of program implementation that approached or exceeded 10 points, a large effect by most standards. The difference in rates of special education and grade retention at age 15 in the Abecedarian project participants exceeded 20 percentage points. In the Elmira, New York, Prenatal/Early Infancy Project (PEIP), participating children experienced 33 percent fewer emergency room visits through age 4 than the controls, and their mothers were on welfare 33 percent less of the time. In the Perry Preschool program, children's earnings when they reached age 27 were 60 percent higher among program participants. Thus, we conclude that there is strong evidence to support the proposition that at least some early interventions can benefit participating children and their mothers.

It is also apparent from Figure 1, however, that for most programs, most indicators are not measured. This is even truer of the maternal analysis, where five of the nine evaluations paid no attention to possible effects on the mother other than parental development. Our analyses thus represent only a partial accounting of program benefits. Furthermore, most evaluations did not involve long-term follow-ups, and some benefits could take a number of years to accrue (some could also erode with the passage of time).

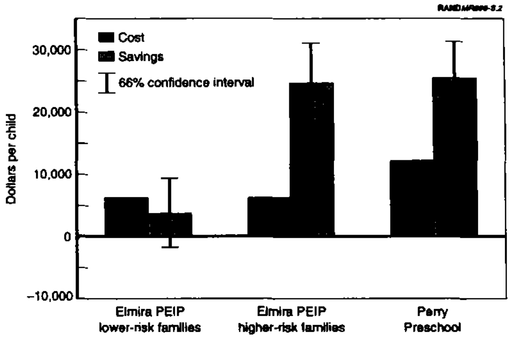
What Are the Savings?

Some people may think that the benefits of targeted early intervention programs for participating families are enough to justify public expenditures on them. Others may appreciate the benefits to disadvantaged children but may be reluctant to raise tax burdens to accomplish such goals or may wish, at least, for broader favorable ramifications from an investment of public funds. One source of broader benefit is the potential savings the government (and thus taxpayers) realize when families participating in early interventions require lower public expenditures later in life. Participating children may spend less time in special-education programs. Parents and, as they become adults, children may spend less time on welfare or under the jurisdiction of the criminal justice system. They may also earn more income and thus pay more taxes.

In Figure 2, we compare program costs with eventual government savings for two of the nine programs—Perry Preschool and the Elmira PEIP. The Perry Preschool program enrolled 123 disadvantaged African American children in Ypsilanti, Michigan, in the mid-1960s. The program was a part-time preschool that included weekly home visits by the teacher and lasted for one or two school years. For the Elmira PEIP, 400 disadvantaged, primarily nonminority families received home visits by nurses trained in parent education, establishment of support networks for the mother, and linkage of the family to other health and human services. Mothers received an average of 32 visits from the fourth month of pregnancy through the child's second year. We chose these two interventions for three reasons:

- They were random trials that satisfied sample size and attrition criteria.
- They measured progress on developmental, educational, economic, criminal justice, and health measures that could be expressed in monetary terms.
- They followed the children long enough for benefits to accrue. The latest Elmira PEIP follow-up was at age 15 and Perry Preschool at age 27.

For the Elmira PEIP estimates, we followed the approach taken in the evaluation of that project, which was to split the results into two groups. One contained the higher-risk families (those with single mothers and low socioeconomic status) and the other the lower-risk families. Costs and savings for the two Elmira PEIP groups and for the Perry Preschool participants are shown in Figure 2.[4] Costs are known with a fair degree of certainty. The precision of the savings estimates, however, depend on the sample sizes, and the vertical lines indicate the 66 percent confidence band (that is, there is a 66 percent probability that the true benefit level falls along the vertical line). A vertical line of twice the length shown would indicate a 95 percent confidence band.



SOURCE: See Figure 3.5 in *Investing in Our Children*.
NOTE: All amounts are in 1996 dollars and are the net present value of amounts over time where future values are discounted to the birth of the participating child, using a 4 percent annual real discount rate.

Figure 2—Program Cost Versus Savings to Government (Taxpayers)

For the Perry Preschool and the higher-risk families of the Elmira PEIP, our best estimates of the savings to government are much higher than the costs (about $25,000 versus $12,000 for each participating Perry family; $24,000 versus $6,000 for Elmira). Although there is considerable uncertainty with respect to the benefit estimates, from a statistical point of view we can be more than 95 percent certain that the benefits exceed the costs.[5] It is worth pointing out, however, that while benefits exceed costs, the costs accrue immediately, while the benefits are realized only as the years pass and children transition through adolescence to adulthood.

In the case of the lower-risk participants of the Elmira PEIP, the savings to government are unlikely to exceed the costs. In fact, our best estimate of the net savings is that they are negative:

[4] Dollars shown have been converted to present value—i.e., future costs and savings have been discounted (at 4 percent per year) to recognize the standard assumption in economics that, even apart from inflation, people attach less value to future dollars than to current ones. "Present" here is the year of the child's birth. All amounts are in 1996 dollars.

[5] There are however, other uncertainties that are not related to sample size and that cannot be measured with statistical methods.

The government savings, while positive, are not enough to offset program costs. This result illustrates the importance of targeting programs to those who will benefit most if the hope is to realize government savings that exceed costs.

We emphasize, however, that while we included the full costs of the programs, we could not account for all benefits. The Elmira PEIP, which has followed participating children only to age 15 so far, provides no basis for calculating the amount these children may save the government in welfare costs, or the extra taxes they may pay as adults. We might expect such savings even for the lower-risk participants, although the longer-run savings may be less than those generated by children in the higher-risk families. The Perry savings may also be underestimated because benefits to mothers were not measured.

Furthermore, the programs generate additional benefits to society beyond the government. These include the tangible costs of the crimes that would eventually have been committed by participating children, had they not participated in the program. The benefits also include the extra income generated by participating families (not just the taxes on that income), which can be reckoned as a benefit to the overall economy. We estimated these two benefit sources combined as roughly $3,000 per family in the case of the lower-risk Elmira participants, about $6,000 per family for the higher-risk Elmira participants, and over $24,000 per family in the Perry case.

While the net savings and other benefits from these programs appear promising, caution must be exercised for various reasons in drawing generalizations for public policy. We explain most of these reasons below, but two relate specifically to the cost-savings approach. First, because these are the only two programs whose evaluation characteristics permit estimates of long-term savings with any accuracy, we cannot say that different programs would also generate such savings (by the same token, we cannot say that they wouldn't). Second, because there was some variation between the two programs in the indicators of success measured, we cannot conclude from the different net savings numbers that one program is better than the other.

One final caveat: Cost-savings analysis is a useful tool because, when the results are positive, it provides strong support for program worth. That is, it shows that only a portion of the benefits—those easily monetizable—outweigh the program's entire cost.[6] However, because only some of the benefits are taken into account, a negative result does not indicate that a program shouldn't be funded. Policymakers must then decide whether the nonmonetizable benefits—e.g., gains in IQ, in parent-child relations, in high-school diplomas—are worth the net monetary cost to the government.

What Remains Unknown and What Does It Mean for Policy?

On the basis of research conducted to date, we know that some targeted early intervention programs have substantial favorable effects on child health and development, educational achievement, and economic well-being. We also know that some of these programs, if targeted to families who will benefit most, have generated savings to the government that exceed the costs of the programs. There is still much that we do not know about these programs, however, and this limits the degree to which these conclusions can be generalized to other early

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[6] A decision as to whether to fund a program must, of course, also take into account budgetary constraints and other uses for the money.

intervention programs. One of the big unknowns is why successful programs work—and others don't. In particular, we do not know the following:

- *Whether there are optimal program designs.* There have not been enough controlled comparisons that can support choices between focusing on parents versus children (or both), intervening in infancy versus the preschool years, integrating interventions versus running them independently, or tailoring to individual needs versus treating children the same but treating a greater number.
- *How early interventions can best be targeted to those who would benefit most.* It is not yet known which eligibility criteria would generate the most positive benefit/cost ratios. In addition, whatever criteria are used will have dramatic implications for program cost and implementation.

There are other unknowns:

- *Whether the model programs evaluated to date will generate the same benefits and savings when implemented on a large scale.* The demonstrations have been undertaken in a more resource-intensive, focused environment with more highly trained staff than is likely to be achievable in full-scale programs.
- *What the full range of benefits is.* Typically, evaluations have focused on those aspects of development that the intervention was intended to influence. But we know from some studies that programs can have a broad array of effects beyond their principal objectives.
- *What the implications of the changing social safety net are.* Previous demonstrations were carried out under the now-superseded welfare system. To some extent, those interventions depended on that system for collateral support of families, and the savings generated were partly in terms of welfare costs that the government may not now be paying out anyway.

These unknowns will have to be resolved if wise decisions are to be made among early intervention alternatives and if the programs chosen are to be designed to fully realize their potential for promoting child development—and saving money. In particular, research is needed into why programs work. Otherwise, inferences cannot be drawn about new program designs, and every such design would be unproven until tested and evaluated.

The scope of further research should depend on the specific information sought or the scale of the program. New demonstrations are needed to answer questions that require variations in program design or that reflect the evolving society and economy, and broader testing of previous designs is required to answer questions of scale-up. However, on questions of targeting, benefits beyond objectives, and other issues, much could also be gained—and less expensively—by making the most of evaluations already under way—e.g., by further follow-ups and expansion of the set of benefits measured. Finally, where governments see fit to initiate large-scale public programs on the basis of current knowledge, careful evaluation should be a component. Then, when budgets tighten again and choices need to be made, the worth (or lack of worth) of these programs will be more firmly established.

The research required represents a substantial commitment of funds—most likely in the millions or even the tens of millions of dollars. However, the early intervention programs that may prove warranted (and that some people are already advocating) will represent a national investment in the hundreds of millions or billions of dollars. A modest if substantial expenditure initiated now could thus ensure that maximum benefits are achieved from a much larger expenditure over the long term.

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RECENT PRESENTATIONS

Testimony and Policy Forums

May 1997, Sacramento, California, "The Costs and Benefits of Early Childhood Interventions," presentation for California state legislative and exective branch staff.

July 1997, Las Vegas, NV, "The Costs and Benefits of Early Childhood Interventions," National Governor's Association Annual Meeting.

July 1997, Washington, DC, "Retiree Health Benefits and Retirement Decisions," RAND/Department of Labor Conference on Health Benefits and the Workforce.

May 1997, Sacramento, CA, "Growing Economic Disparities in the U.S.: Assessing the Problem and Policy Options," testimony before the California Assembly Select Committee on the California Middle Class.

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October 1996, New York, NY. "Economic Inequality in the U.S.," RAND New York Policy Forum.

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October 1995, Los Angeles, CA. "Working for What? Working Families Confront the End of Affluence," Roundtable Discussion, California State Assembly Labor and Employment Committee.

October 1995, Boston, MA. "Income Inequality: Policy Options," Committee on New American Realities, National Planning Association.

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April 1998, Chicago, IL. "Health Insurance and Labor Market Transitions of Older Workers," presented at the annual meetings of the Population Association of America (with Jeannette A. Rogowski).

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May 1996, New Orleans, LA. "Retiree Health Benefits and the Decision to Retire Early: Evidence from the Health and Retirement Survey," presented at the annual meetings of the Population Association of America (with Jeannette A. Rogowski).

April 1996, Los Angeles, CA. "Anatomy of the U.S. Income Distribution: Two Decades of Change," presented at the University of Southern California Population Research Laboratory Seminar.

January 1996, San Francisco, CA. "Anatomy of the U.S. Income Distribution: Two Decades of Change," presented at the annual meetings of the American Economic Association.

June 1995, Madison, WI. "Demographic Change, Rising Earnings Inequality, and the Distribution of Personal Well-Being, 1959-1989," Institute for Research on Poverty Summer Workshop.

April 1995, San Francisco, CA. "The Indonesian Family Life Survey: Household Survey," presented at the annual meetings of the Population Association of America.

April 1995, San Francisco, CA. "A General Equilibrium Approach to Changing Relative Wages," presented at the annual meetings of the Population Association of America (with Jacob Alex Klerman).

February 1995, Portland, OR. "Demographics, Sectoral Change, and Changing Relative Wages: A Regional Approach," presented at the Urban Economics and Policy Seminar, Portland State University (with Jacob A. Klerman)

January 1995, Washington, DC. "Money for Nothing? Remittances by Migrants in the Malaysia Family Life Surveys," presented at the annual meetings of the American Economics Association.

November 1994, Orlando, FL. "Health Care Reform: Labor Market Perspectives," roundtable discussion at the annual meetings of the Southern Economics Association.

October 1994, Chicago, IL. "Retirement Behavior and Health Care Reform," presented at the annual meetings of the Association for Public Policy Analysis and Management (with Jeannette Rogowski).

June 1994, Vancouver, BC. "Long Jobs *and* Lots of Jobs?," presented at annual meetings of the Western Economics Association (with Jacob Alex Klerman).

January 1994, Los Angeles, CA. "Demographics, Sectoral Change, and Changing Relative Wages: A Regional Approach," RAND conference on "Reshaping the Family: Social and Economic Changes and Public Policy" (with Jacob Alex Klerman).

January 1994, Berkeley, CA. "The Effects of Rising Earnings Inequality on the Distribution of U.S. Income," Demography Seminar Series, University of California, Berkeley (with Gary Burtless).

December 1993, Washington, DC. "The Effects of Rising Earnings Inequality on the Distribution of U.S. Income," Brookings Economics Seminar (with Gary Burtless).

December 1993, Washington, DC. "The Effects of Rising Earnings Inequality on the Distribution of U.S. Income," U.S. Bureau of the Census (with Gary Burtless).

October 1993, Washington, DC. "The Effect of Health Insurance on the Decision to Retire," presented at annual meetings of the Association of Public Policy and Management (with Jeannette A. Rogowski).

October 1993, Washington, DC. "Demographics, Sectoral Change and Changing Relative Wages: A Regional Approach," presented at U.S. Department of Labor (with Jacob A. Klerman).

September 1993, Washington, DC. "Demographics, Sectoral Change and Changing Relative Wages: A Regional Approach," presented at Labor Economics Seminar, University of Maryland (with Jacob A. Klerman).

June 1993, Lake Tahoe, CA. "The Effect of Health Insurance on the Decision to Retire," presented at annual meetings of the Western Economics Association (with Jeannette A. Rogowski).

June 1993, Ithaca, NY. "The Effect of Health Insurance on the Decision to Retire," presented at Conference on Health Insurance and the Labor Market, Cornell University (with Jeannette A. Rogowski).

April 1993, Cincinnati, OH. "Remittances by Migrants: Evidence from the Malaysia Family Life Survey," presented at annual meetings of the Population Association of America (with Nga Vuong).

April 1993, Cincinnati, OH. "Demographics, Sectoral Change and Changing Relative Wages: A Regional Approach," presented at annual meetings of the Population Association of America (with Jacob A. Klerman).

February 1993, Santa Monica, CA. "Demographics, Sectoral Change, and Changing Relative Wages: A Regional Approach," presented at RAND Population, Aging and Development Seminar (with Jacob A. Klerman).

January 1993, Anaheim, CA. "Demographics, Sectoral Change, and Changing Relative Wages: A Regional Approach," presented at annual meetings of the American Economics Association (with Jacob A. Klerman).

REFEREEING

American Journal of Sociology, Contemporary Policy Issues, Demography, Eastern Economics Journal, Economic Inquiry, Industrial and Labor Relations Review, Journal of the American Statistical Association, Journal of Economic Literature, Journal of Human Resources, Journal of Political Economy, National Science Foundation, National Tax Journal, RAND Journal of Economics, The Review of Economics and Statistics, The Review of Income and Wealth.

LYNN A. KAROLY

LYNN A. KAROLY is a RAND senior economist and director of the RAND Labor and Population Program. Dr. Karoly recently lead an interdisciplinary team of RAND researchers who investigated the costs and benefits of early childhood intervention programs. Other areas of Dr. Karoly's expertise include economic inequality in the U.S., youth labor markets, and retirement behavior. In addition to her research, Dr. Karoly is the training director for the RAND Postdoctoral Research Programs in the Study of Aging and in Population Research. She has been on the faculty of the RAND Graduate School of Policy Studies since 1989. In 1993, she was a visiting fellow in the Economics Studies Program at the Brookings Institution in Washington, D.C. She is currently a research associate with the Institute for Research on Poverty at the University of Wisconsin, Madison and is a co-editor of the *Journal of Human Resources*.

Dr. Karoly received a B.A. (*summa cum laude*, 1983) in Economics and Mathematics from Claremont McKenna College and an M.A. (1986) and Ph.D. (1988) in Economics from Yale University.

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LYNN A. KAROLY

FEDERAL CONTRACTS AND GRANTS SINCE OCTOBER 1, 1995

U.S. Department of Labor, Pension and Welfare Benefits Administration, Contract No. J-9-P-7-0045, Co-Principal Investigator, "Retiree Health Benefits and Labor Force Transitions of Women," March 1998–February 1999. Total budget: $150,000.

National Institutes of Health, National Institute of Child Health and Human Development, Grant No. 2P01-HD28372, Principal Investigator, "Schooling Choices and Outcomes in Economic Development," March 1998–February 2003. Total budget: $390,000 (direct).

Social Security Administration, Office of Research Evaluation and Statistics, Contract No. 0600-96-27335, Co-Principal Investigator, "Policy Evaluation of the Effects of the 1996 Welfare Reform Legislation on SSI Benefits for Disabled Children" August 1997–July 1999. Total budget: $620,000.

National Institutes of Health, National Institute of Child Health and Human Development, Principal Investigator, Grant No. T32-HD-07329, "RAND Postdoctoral Training Program in Population Studies," May 1997–April 2002. Total budget: $300,000.

U.S. Department of Labor, Pension and Welfare Benefits Administration, Contract No. J-9-P-2-0017, Co-Principal Investigator, "Retiree Health Benefits and Labor Force Transitions," November 1996–October 1997. Total budget: $125,000.

U.S. Department of Labor, Pension and Welfare Benefits Administration, Contract No. J-9-P-2-0017, Co-Principal Investigator, "Retiree Health Benefits, Changes to Medicare, and Retirement," November 1995–April 1997. Total budget: $150,000.

National Institutes of Health, National Institute on Aging, Co-Principal Investigator, Grant No. 2P01-AG08291, "The Indonesian Family Life Survey of Aging Dynamics," October 1995–September 1998. Total budget: $900,000.

National Institutes of Health, National Institute of Child Health and Human Development, Co-Principal Investigator, Grant No. R01-HD33778, "The Indonesian Family Life Survey of Mothers and Children," July 1995–June 1998. Total budget: $900,000.

U.S. Department of Labor, Pension and Welfare Benefits Administration, Contract No. J-9-P-2-0017, Co-Principal Investigator, "Firm Decisionmaking and Retiree Health Benefits," April 1995–April 1997. Total budget: $150,000.

Agency for Health Care and Policy Research, Grant No. R01-HS07048, Co-Principal Investigator, "Health Insurance for Older Americans," April 1995–March 1998. Total budget: $845,000.

National Institutes of Health, National Institute on Aging, Principal Investigator, Grant No. T32-AG00244, "RAND Postdoctoral Training in the Study of Aging," September 1994–August 1999. Total budget: $300,000.

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