DOCUMENT RESUME

ED 293 654 PS 017 314

TITLE	Opportunities for Success: Cost Effective Programs for Children Update, 1988. A Report of the Select Committee on Children, Youth and Families, U.S. House of Representatives, One Hundredth Congress, Second Session.
INSTITUTION	Congress of the U.S., Washington, DC. House Select Committee on Children, Youth, and Families.
PUB DATE	88
NOTE	68p.; Document contains small type. For the 1985 report, see ED 263 725.
AVAILABLE FROM	Superintendent of Documents, Congressional Sales Office, U.S. Government Printing Office, Washington, DC 20402 (Stock No. 552-070-03883-3, $2.25).
PUB TYPE	Legal/Legislative/Regulatory Materials (090) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	*Children; *Compensatory Education; *Cost Effectiveness; Disabilities; *Federal Programs; Immunization Programs; Participation; *Preschool Education; *Program Effectiveness; Program Evaluation; *Youth Employment
IDENTIFIERS	Congress 100th; Education for All Handicapped Children Act; Medicaid; Prenatal Care; Program Characteristics; Special Supplemen Food Program Women Infants Child

ABSTRACT

Based on findings of the most current and highly regarded evaluations and research reviews available, this committee print provides an update of a prior committee report (August, 1985) on eight cost-effective federal programs for children. Described in terms of program participation, characteristics, benefits for children, cost effectiveness, and empirical findings are: (1) the Special Supplemental Food Program for Women, Infants, and Children; (2) prenatal care; (3) Medicaid; (4) childhood immunization; (5) preschool education; (6) compensatory education; (7) education for all handicapped children; and (8) youth employment and training. Charts of program participation provide data for comparisons during a 4- or 5-year period. An annotation is provided for each cited study. Introductory material highlights program effects in terms of benefits for children, cost benefits, and program participation. (RH)

[COMMITTEE PRINT]

OPPORTUNITIES FOR SUCCESS: COST EFFECTIVE PROGRAMS FOR CHILDREN UPDATE, 1988

A REPORT

OF THE

SELECT COMMITTEE ON CHILDREN, YOUTH, AND FAMILIES

U.S. HOUSE OF REPRESENTATIVES

ONE HUNDREDTH CONGRESS

SECOND SESSION

Printed for the use of the Select Committee on Children, Youth, and Families

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U.S. GOVERNMENT PRINTING OFFICE
83-592 WASHINGTON : 1988

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

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OPPORTUNITIES FOR SUCCESS: COST-EFFECTIVE PROGRAMS FOR CHILDREN UPDATE, 1988

INTRODUCTION

Careful inquiry by biomedical and behavioral scientists has made it possible to devise many effective ways of preventing damage to children and adolescents worldwide....It is possible now to fashion clear guidelines for preventive action by putting together what we know about risk factors...with interventions that are proven or promising for each developmental stage, from before birth through adolescence.

David A. Hamburg, M.D., President,
Carnegie Corporation of New York
Testimony before the Select Committee
on Children, Youth, and Families,
April 28, 1987

* * * * *

Three years ago, the Select Committee on Children, Youth, and Families issued its first comprehensive report on the success and cost-effectiveness of eight major federal programs that promote the health, education, nutrition and development of children in America. That report provided powerful research evidence that these key programs can make critical improvements in the lives of millions of children in this country, while reducing significantly the need for costly expenditures for years to come.

After 3 years of additional hearings, investigations, and studies, the evidence that these programs work -- that they help children and families and save money, too -- is even stronger.

Since that initial report, more than 25 additional studies have been completed that reinforce the original findings and extend our knowledge of the workability and effectiveness of these preventive services. And the constituency which supports continued, and expanded, investment in these efforts has grown beyond the child advocacy community to include major political and business leaders such as the National Governor's Association and the Committee on Economic Development.

As in 1985, we know how to use public policy to benefit children and to save the Federal treasury billions of dollars in long-term costs. Yet these proven programs fail to reach millions of eligible children and families who urgently need services. In some cases, we have not even kept pace with current need: we have fallen further behind, for example, in the immunization of preschool children against life-threatening diseases.

As in our first report, the findings in this updated version have been drawn from the most current and highly regarded evaluations and research reviews available. While we have described the most dramatic findings, in every case they are fully consistent with the weight of the evidence available.

The programs identified in this report have proven their cost-effectiveness time and time again. Other programs, which have not been incorporated into the study at this time, may well be just as effective. We choose not to include them because some have not yet been as thoroughly evaluated as those we have included, or because they may be too new to permit accurate longitudinal evaluations. "Family preservation" programs of intensive in-home early intervention services designed to prevent out-of-home placement of children can be both highly successful and cost-effective. Community-based family support programs are also showing promise. A shortage of rigorous independent evaluations prevents inclusion of these programs at this time, underscoring the need for additional research.

We acknowledge the methodological limitations present in evaluating social programs. However, it is extremely important to evaluate publicly supported programs and, for that reason, to develop the very best evaluation methods possible. In addition to enhancing our understanding of their impact on children and their budgetary implications, evaluations help us improve program design and delivery. The research reviewed in this study relies on the best methodologies available.

The new evidence presented in this report reinforces our earlier conclusion that "when the evaluations prove as positive as those found in this report, especially during a period of limited resources, we should use them to point the way to additional opportunities for sound investments in America's children and families." Given the precarious -- and in some cases, worsening -- status of America's children in such priority areas as medical care, housing, education and nutrition, this report will be an invaluable document for use by researchers, policymakers, and elected officials in responding to the urgent needs of children and families.

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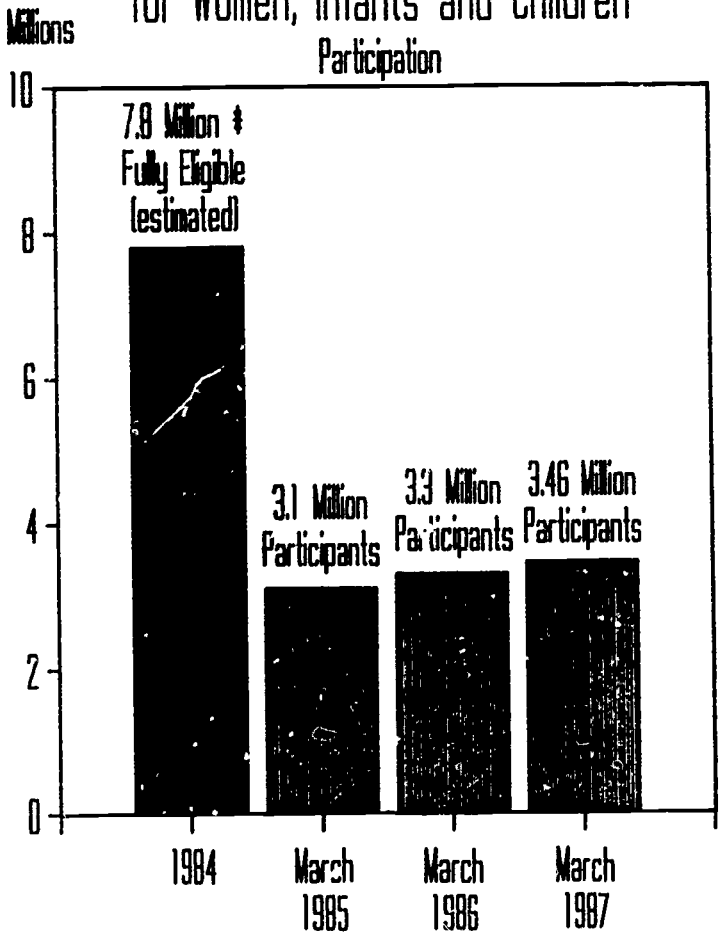
HIGHLIGHTS OF PROGRAM EFFECTS

HIGHLIGHTS OF PROGRAM EFFECTS

	BENEFITS FOR CHILDREN	COST BENEFIT	PARTICIPATION
WIC -- SPECIAL SUPPLEMENTAL FOOD PROGRAM FOR WOMEN, INFANTS AND CHILDREN	Reduction in infant mortality and births of low birthweight infants; reduced prevalence of anemia; improved cognitive skills	$1 investment in prenatal component of WIC has saved as much as $3 in short-term hospital costs	3.46 million participants -- about 44% of those eligible -- received WIC services in March 1987, up by 300,000 since Spring 1985.
PRENATAL CARE	Reduction in prematurity, low birthweight births and infant mortality; elimination or reduction of diseases and disorders during pregnancy	$1 investment can save $3.38 in cost of care for low birthweight infants	24% of live births in 1985 were to mothers who did not begin prenatal care in the first trimester of pregnancy. The rate for white births was 21%, for black births 36%. Figures reflect essentially no change since 1982.
MEDICAID	Decreased neonatal and infant mortality, and fewer abnormalities among children receiving EPSDT services	$1 spent on comprehensive prenatal care added to services for Medicaid recipients has saved $2 in infant's first year; lower health care costs for children receiving EPSDT services	In FY 1986, an estimated 9.95 million dependent children under 21 were served by Medicaid, including 2.14 million screened under EPSDT. Figures reflect an increase of 400,000 served under Medicaid, but a drop of half million screened under EPSDT in FY 1983. In calendar year 1986 there were 12.95 million children in families below the poverty line, compared to 14.3 in FY 1983.
CHILDHOOD IMMUNIZATION	Dramatic declines in incidence of rubella, mumps, measles, polio, diphtheria, tetanus and pertussis	$1 spent on Childhood Immunization Program saves $10 in later medical costs	In 1985, the total percent of children ages 1-4, immunized against the major childhood diseases ranged from 73.8 for rubella to 87.0 for diphtheria-tetanus-pertussis. For those 5-14, percent immunized ranged from 85.3 for rubella to 93 for DTP. Smaller proportions of children in both age groups were immunized against polio, measles and rubella in 1985 than in 1983.

PRESCHOOL EDUCATION	Increased school success, employability and self esteem; reduced dependence on public assistance	$1 investment in quality preschool education returns $6 because of lower costs of special education, public assistance, and crime	In 1985, there were 10.7 million children ages 3-5. 5.9 million of them were enrolled in public and non-public pre-primary programs. 453,000 children -- fewer than 1 out of every 5 eligible -- were participating in Head Start as of September 1987. Since 1983, the number of children ages 3-5 and the number enrolled in public and non-public pre-primary programs increased by 500,000; Head Start participation is up by only 11,000.
COMPENSATORY EDUCATION	Achievement gains and maintenance of gains in reading and mathematics	Investment of $750 for year of compensatory education can save $3700 cost of repeating grade	In 1985 4.9 million children -- an estimated 50% of those in need -- received Chapter I services under the LEA Basic Grant Program. This reflects an increase of 200,000 children since 1982-1983.
EDUCATION FOR ALL HANDICAPPED CHILDREN	Increased number of students receiving services in regular school setting; greater academic and employment success	Early educational intervention has saved school districts $1560 per disabled pupil	During School Year 1985-86, 4,121,104 children ages 3-21 were served under the State Grant program, up by approximately 27,000 children in 1983-84. The prevalence of handicaps in the population under age 21 is estimated to be 11.4% (9.5-10 million children).
YOUTH EMPLOYMENT AND TRAINING	Gains in employability, wages, and success while in school and afterwards	Job Corps returned $7,400 per participant, compared to $5,000 in program costs (in 1977 dollars). FY 1982 service year costs for YETP $4700, participants had annualized earnings gains of $1810.	During Program Year July 1986-June 1987, 64,954 youths were enrolled in Job Corps, and 432,680 in JTPA Title IIA; 634,000 youths participated in summer youth programs. The annualized number of unemployed persons 16-21 years old in 1986 was 2,160,000. Numbers of youth participating in all activities decreased from the period October 1983 - July 1984 to July 1986 - June 1987, with the exception of participation in JTPA Title IIA.

WIC - Special Supplemental Food Program for Women, Infants and Children



* Includes 50 States, District of Columbia and Territories.

Source: 'Estimation of Eligibility for the WIC Program,' U.S. Dept. of Agric., Food & Nutrition Service, 1987.
Participation: U.S. Dept. of Agric., Food & Nutrition Services.

SPECIAL SUPPLEMENTAL FOOD PROGRAM FOR WOMEN, INFANTS, AND CHILDREN (WIC)

The Special Supplemental Food Program for Women, Infants and Children was established in 1972 with an amendment to the Child Nutrition Act of 1966. The WIC program distributes funds to states and certain recognized Indian tribes or groups to provide supplemental foods to low-income, pregnant, postpartum, and nursing mothers, and infants and children up to age 5 who are diagnosed as being at nutritional risk. The WIC program provides food benefits which are specifically prescribed according to the nutritional needs of the participant. WIC also provides nutrition counseling and education, and serves as an adjunct to health care for the target population.

More than 3.46 million participants received WIC services in March 1987. Based on the USDA estimate of 7.8 million persons in all jurisdictions served by WIC, who were financially and nutritionally eligible for the program in 1984, WIC reaches about 44% of the eligible mothers, infants and children.

Evaluations of the WIC program over the last decade have resulted in a body of evidence showing that the program greatly benefits needy women, infants and young children and is cost effective.

WIC participation has been associated with

Earlier and more adequate prenatal care and improved birth outcomes

- Increase in birthweight of infants born to program participants
- Reduction in the incidence of births of low birthweight infants
- Reduction in neonatal and infant mortality
- Increase in gestational age and reduction in prematurity among infants born to program participants

Largest improvements for populations at higher risk (teenage, unmarried, Black, and Hispanic origin women)

Reduced prevalence of anemia among infants and young children

Improved cognitive skills

Cost effectiveness

- WIC participation in Massachusetts showed that for every $1 invested in the prenatal component of WIC, as much as $3 are saved in short-term hospital costs. (Costs for longer-term treatment of disabilities caused by low birthweight are not included in calculated cost/benefit.)
- WIC participation in Missouri associated with the reduction in Medicaid newborn costs of about $76....For every $1 spent on WIC, about 49¢ in Medicaid costs within 30 days of birth are saved.

STUDIES

Improved Birth Outcomes

Schramm, W.F. "Prenatal Participation in WIC Related to Medicaid Costs for Missouri Newborns: 1982 Update." Public Health Reports. Vol. 101. November/December 1986.

Study replicated evaluation of WIC prenatal participation in Missouri using 9,086 Medicaid records matched with corresponding birth records. In 1982, WIC participation was found to be significantly associated with an increase in mean birthweight of 31 grams and reductions in low birthweight rates of 23 percent. WIC infants had a significantly lower incidence of respiratory distress syndrome and immaturity reported than their non-WIC counterparts.

"WIC participation was also associated with a reduction in Medicaid costs for newborns reported within 45 days of birth amounting to $76 per participant. For every dollar spent on WIC, about $0.49 were apparently saved."

Buescher, P.A. "Source of Prenatal Care and Infant Birthweight: The Case of a North Carolina County. SCHS Studies. No. 36. North Carolina Department of Human Resources. March 1986.

Study of impact of comprehensive prenatal care on birthweights of infants born to low-income women found that the comprehensiveness of the program had a positive impact on birthweight. Among the findings, study reported that, "not being on WIC independently increased the chances of having a low-weight birth by 60%."

Rush, D. The National WIC Evaluation: An Evaluation of the Special Supplemental Food Program for Women, Infants, and Children. U.S. Department of Agriculture. 1986.

The National WIC Evaluation included four studies conducted concurrently to assess program effects. These studies and principal findings include:

The Historical Study of Pregnancy Outcome, which estimated overall changes in birth outcomes attributable to the WIC program over a 9-year period (1972 to 1980), found that WIC was associated with a 4.1% increase in early prenatal care registration and a 5% decrease in the proportion of women receiving inadequate prenatal care; reduction in preterm deliveries; increased duration of gestation; increased birthweight ranging from 26 grams for babies born to less educated black mothers to 47 grams for babies born to less educated white mothers; and a 33% reduction in late fetal deaths.

The Longitudinal Study of Pregnant Women followed a nationally representative sample of pregnant women in WIC and a comparable non-WIC group. Highlights of findings from this study include: increased intake of nutrients considered important to the diets of pregnant women;

reversal after WIC program enrollment of low weight gain in early pregnancy; significantly reduced rates of preterm delivery associated with WIC benefits among women with a history of past low birthweight delivery; and evidence of increased circumferential head growth among infants born to WIC women.

The Study of Infants and Children, which assessed the dietary and developmental status of children, found that WIC participation was associated with better dietary intake, with the strongest effect among children who were poor, black, or in single-mother families; strong nutritional benefits from current WIC participation; better immunization; and better vocabulary and digit memory.

The Food Expenditures Study, which measured the effect of WIC benefits on family food expenditures, found that women participating in WIC show significantly higher expenditures than non-WIC women on WIC-type (more nutritious) foods, although food expenditures among WIC families were not statistically different from the expenditures of non-WIC families.

Stockbauer, J.W. "Evaluation of the Missouri WIC Program: Prenatal Components." Journal of The American Dietetic Association. Vol. 86. No. 1. January 1986.

Using three methods of analysis, a study of Missouri WIC participants who delivered in 1980 and their offsprings' birth/fetal death certificates showed that WIC participants had smaller low birthweight rates and slight increases in mean birthweights than the non-WIC group. In addition, results indicated that duration in WIC had a positive influence on both mean birthweight and low birthweight.

Schramm, W.F. "WIC Prenatal Participation and Its Relationship to Newborn Medicaid Costs in Missouri: A Cost/Benefit Analysis. American Journal of Public Health. Vol. 75. No. 8. August 1985.

Study conducted to "determine if WIC prenatal participation is associated with a reduction in Medicaid costs within 30 days after birth, and, if so, whether the reduction in Medicaid costs is greater than the WIC costs for these women."

"WIC participation was found to be associated with the reduction in Medicaid newborn costs of about $100 per participant; mother's Medicaid costs were not affected. For every dollar spent on WIC, about 83¢ in Medicaid costs within 30 days of birth were apparently saved...."

Institute of Medicine. Preventing Low Birthweight. Washington, D.C.: National Academy Press. 1985.

As part of its study of issues and programs to prevent low birthweight, the Institute of Medicine (IOM) examined available data on the impact of the Special Supplemental Food Program for Women, Infants and Children (WIC). The IOM concludes that the WIC program provides positive benefits to

nutritionally and fina .ally high-risk women. The IOM particularly noted reductions in the incidence of low birthweight births among WIC participants and the finding that early and consistent participation in the program during pregnancy is related to the magnitude of benefit. The IOM recommends "that nutrition supplementation programs such as WIC be a part of comprehensive strategies to reduce the incidence of low birthweight among high-risk women," and that "such programs be closely linked to prenatal services."

Kotelchuck, M., et al. "WIC Participation and Pregnancy Outcomes: Massachusetts Statewide Evaluation Project." American Journal of Public Health. 74:1084-1092. October 1984.

WIC participation is associated with improved pregnancy outcomes, including a decrease in low birthweight incidence (6.9% vs. 8.7%) and neonatal mortality (12 vs 35 deaths), an increase in gestational age (40.0 vs 39.7 weeks), and a reduction in inadequate prenatal care (3.8% vs 7.0%). Subpopulations at higher risk (teenage, unmarried and Hispanic origin women) have more enhanced pregnancy outcomes associated with WIC participation.

Kennedy, E.T., et al. "The effect of WIC supplemental feeding on birthweight: a case-control analysis." American Journal of Clinical Nutrition. 40: 579-585. 1984.

Participation in WIC is associated with a 107 gram increase in mean birthweight and a 40% decrease in the incidence of low birthweight (p= .059). Teenage, black and Hispanic women show similar, if not stronger, benefits.

U.S. General Accounting Office. WIC Evaluations Provide Some Favorable but No Conclusive Evidence on the Effects Expected for the Special Supplemental Program for Women, Infants and Children. GAO No. PEMD-84-4. Washington, D.C. January 1984.

GAO report reviewed WIC evaluations and, while noting uneveness in quality of available evidence, concluded that substantial data exist for increases in mean birthweight and decreases in the percentage of low birthweight infants.

Kennedy, E.T., et al. "Cost/benefit and cost/effectiveness of WIC." Unpublished paper. Testimony at hearing, Prevention Strategies for Healthy Babies and Healthy Children. Select Committee on Children, Youth, and Families. U.S. House of Representatives. June 1983.

Researchers conducted review of retrospective medical and nutrition data on 1328 WIC and non-WIC pregnant women in Massachusetts. Analyses showed that participation in WIC was positively and significantly associated with birthweight. Cost-benefit analysis yielded a benefit-cost ratio of as much as 3.1:1 favoring WIC. Every dollar spent on WIC for the prenatal care component can save three dollars in hospital costs. Longer-term costs for treatment of disabilities caused by low birthweight were not addressed in the analyses, but data show that the incidence of handicaps increases as birthweight decrease.

Kennedy, E.T., et al. "Evaluation of the effect of WIC supplemental feeding on birth weight." Journal American Dietetic Association. 80:220. 1982.

Harvard School of Public Health study showed average gain of 122 grams in birthweight among infants born to WIC participants.

Kotelchuck, M., et al. Final Report: Massachusetts Special Supplemental Food Program for Women, Infants and Children (WIC) Follow-up Study. 1982.

Follow-up study found an increase from +23 to +23.5 grams in mean WIC effect on birthweight that again averaged 110 grams in women participating in WIC for more than 6 months.

Kotelchuck, M., et al. Final Report: 1980 Massachusetts Special Supplemental Food Program for Women, Infants and Children Evaluation Project. Submitted to Food and Nutrition Service, U.S. Department of Agriculture, Washington, D.C. 1981.

Study by Kotelchuck and colleagues at Harvard found positive effect of WIC participation on birthweight of infants born to program particpants. Gains averaged 110 grams in women participating in WIC for greater than six months. The study and follow up also found significantly fewer neonatal deaths in infants born to WIC mothers when compared to babies of non-WIC women.

Endozien, J., et al. Medical evaluation of the Supplemental Food Program for Women, Infants and Children. U.S. GPO, 75-123, Washington, D.C. 1976.

Researchers at University of North Carolina reported average gains of +136 grams in birthweight of infants of program participants.

Effects for Populations at Higher Risk

Rush, D. 1986. op. cit.

Institute of Medicine. 1985. op. cit.

Kotelchuck, M., et al. 1984. op. cit.

Kennedy, E.T., et al. 1984. op. cit.

Decrease in Prevalence of Anemia Among Low-Income Children

Yip, R., et al. "Declining Prevalence of Anemia Among Low-Income Children in the United States." Journal of the American

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Medical Association. Vol. 258. No. 12. September 25, 1987.

A study of children enrolled in WIC and other public health programs showed that the prevalence of anemia declined significantly among children seen "at preenrollment screening visits, as well as those seen at follow-up visits, suggesting a generalized improvement in childhood iron nutritional status in the United States, as well as a positive impact of public health programs."

Vasquez-Seoane, P., et al. "Disappearance of Iron-Deficiency Anemia in a High-risk Infant Population Given Supplemental Iron." Special Report. New England Journal of Medicine. Vol. 313. No. 19. November 1985.

Study reviewing records comparing hemoglobin status of children seen at an inner-city health center prior to establishment of the WIC program with status of health center children 95% of whom were enrolled in the WIC program showed "near disappearance of nutritional anemia in an inner-city population of poor infants and children between 1971 and 1984." Investigators concluded that "supplementation of the diets of these children by iron-rich foods provided by the WIC program is the most likely explanation for the improved hematologic status...."

Improved Cognitive Skills

Rush, ·. 1986. op. cit.

Cost Effectiveness

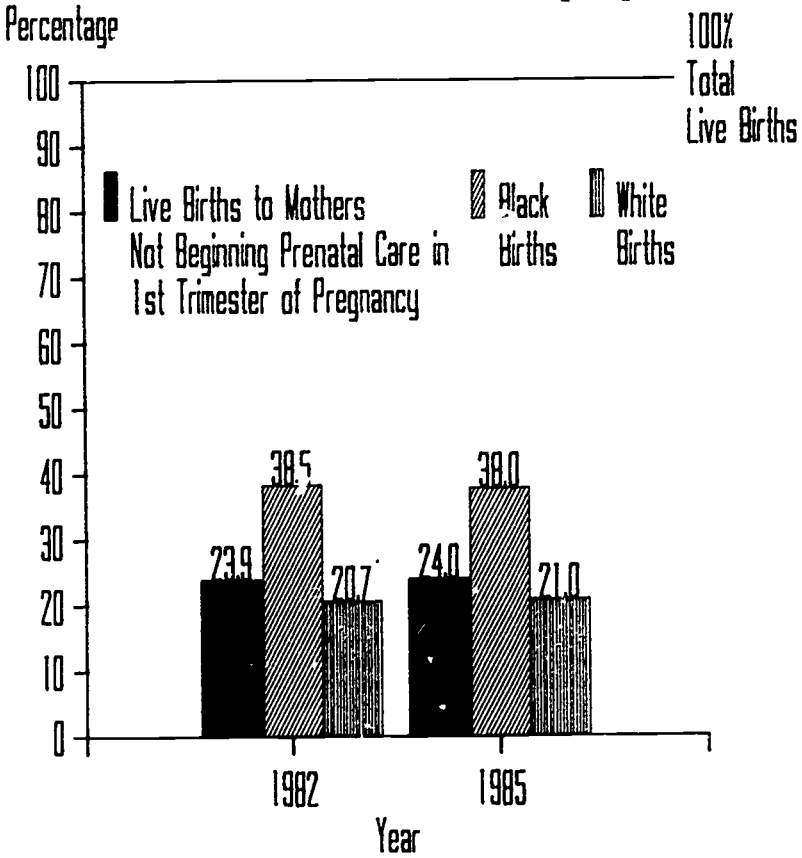
Schramm, W.F. 1986. op. cit.

Schramm, W.F. 1985. op. cit.

Kennedy, E.T., et al 1983. op. cit.

Prenatal Care

Percent of Live Births to Mothers Not Beginning Prenatal Care in First Trimester of Pregnancy



Source: U.S. Dept. of Health & Human Services. Nat'l. Ctr. for Health Statistics. Advance Report of Final Natality Statistics, 1985. Monthly Vital Statistics. Vol.36, No.4, Supplement, July 1987.

U.S. Dept. of Health & Human Services. Nat'l. Ctr. for Health Statistics. Unpublished data based on Advanced Report of Final Natality Statistics, 1982. Monthly Vital Statistics, Vol.33, No.6, Sept. 1984.

PRENATAL CARE

Several public programs provide support for prenatal care services for low-income pregnant women. Major among these are the Maternal and Child Health Services Block Grant, permanently authorized under Title V of the Social Security Act; and Medicaid, permanently authorized under Title XIX of the Social Security Act.

Early and adequate prenatal care has been associated with improved pregnancy outcomes, and the lack of such care with increased risk of low birthweight births and other poor pregnancy results. Research on the effectiveness and value of prenatal care clearly demonstrates

Improved maternal and child health

- Reduction in infant mortality
- Reduction in low birthweight
- Decrease in prematurity
- Most effective reduction in low birthweight births among high risk women, whether the risk derives from medical factors, sociodemographic factors, or both
- Elimination or reduction of diseases and disorders during pregnancy that can threaten health of mother and infant

Cost effectiveness

- An estimated net $22.4 million could be saved in the first year alone from the provision of prenatal care to pregnant women in California who now go without it. Over time, by avoiding preventable disabilities in children, the savings could increase to approximately $2.6 billion annually.
- At University of California at San Diego in 1985, an average of $2,200 more was spent on hospital care for each baby born to a mother receiving no prenatal care than on babies whose mothers received adequate prenatal care.
- Between 10,000 and 13,000 premature babies are admitted to newborn intensive care units each year in California at a cost of $70 million to the state's MediCal program. An estimated 1/3 of those premature births and their associated medical costs could have been avoided with adequate prenatal care.
- Institute of Medicine calculated that for every $1 spent, $3.38 can be saved in the costs of care for low birthweight infants.
- Michigan Department of Public Health analysis shows that for every $1 spent, $6.12 could be saved in newborn intensive care costs.
- Colorado Health Department estimated that $9 could be saved in medical expenses of premature infants for every dollar spent, if comprehensive prenatal care were provided to low-income women.

STUDIES

Improved Maternal and Child Health

"Larger Share of Maternal Deaths for Massachusetts Women With Poor Prenatal Care." Family Planning Perspectives. Vol. 19. No. 5. October 1987.

A review by the maternal mortality committee of the Massachusetts Medical Society of all maternal deaths that occurred in the state between 1954 and 1985 indicated an increase over the past 10 years in the proportion of women dying as a result of pregnancy or childbirth who received no or inadequate prenatal care. In 1976-1979, 17% of women who died had not received adequate prenatal care; by 1982-85, this proportion had increased to 55%."

Miller, C.A. Maternal Health and Infant Survival. National Center For Clinical Infant Programs. Washington, D.C. July 1987.

Study examined pregnancy related supports and services in ten western European countries and in the United States. Miller pointed out that demographic similarities have increased over the last 40 years due to migration in the European nations. This study documented lower rates of low birthweight in those countries compared to U.S. overall and for U.S. white births which have the lowest rates in this country, and the assurance of pregnancy and maternity services to women of all socioeconomic levels in the European nations using many diverse strategies. With regard to national finances, the study explained that "expansion of services and supports related to childbearing has not been a deterrent in most countries to efforts for holding firm or even reducing the proportion of gross national product commited to health care....These observations justify the conclusion that national policies that assure participation in free maternity services are compatible with low national cost of health care and may actually contribute to economies."

Lazarus, W. and West, K. Back to Basics: Improving the Health of California's Next Generation. A Report of the Children's Research Institute of California and the Southern California Child Health Network. 1987.

Study of the provision of prenatal and perinatal care in California reported that

Babies born to mothers receiving adequate prenatal care are 5 times more likely to live than babies whose mothers received no prenatal care, and are more than 1 1/2 times as likely to be born at adequate birth weight.

"An estimated half of the mothers at risk for premature labor can be taught through good prenatal care to reduce their chances of premature labor."

"According to the most conservative projections, between 10,000 and 13,000 premature babies are admitted to

newborn intensive care units each year in California at a cost of $70 million to the state's MediCal program. An estimated 1/3 of those premature births and their associated medical costs could have been avoided with adequate prenatal care."

"At UC-San Diego in 1985, an average of $2,200 more was spent on hospital care for each baby born to a mother receiving no prenatal care than on babies whose mothers received adequate prenatal care. If California could reach even half of the 32,000 pregnant women who receive late or no prenatal care, over $35 million could be saved in prevented newborn hospitalization alone."

Authors also estimate that "it will cost approximately $32 million per year to provide prenatal care to the pregnant women [in California] who now go without it. Savings from this investment in the first year alone amount to an estimated $54.4 million -- for a net savings of $22.4 million. Over time, by avoiding preventable disabilities in children, the savings could increase to approximately $2.6 billion annually."

Council on Maternal and Child Health, National Association for Public Health Policy. "Background Paper on Universal Maternity Care." Journal of Public Health Policy. Vol. 7. No. 1. Spring 1986.

Report on maternity care documents that comprehensive prenatal care can eliminate or reduce the effects of diseases or disorders during pregnancy, such as diabetes, anemia, hypertension, etc., which can lead to problems for mother and infant unless properly treated; and decrease the likelihood of a baby being born low birthweight, "the single most important factor associated with infant mortality". The review further reports that while effects of prenatal care on newborn health can be seen most sharply in comparisons of those infants born to mothers who received any prenatal care versus those born to women who have had no prenatal care, "the number of prenatal visits also makes a difference, with the risk of poor health decreasing with more and earlier visits during the pregnancy." Authors concluded that "providing comprehensive, prevention-oriented perinatal care is approximately five times more cost-effective than providing treatment-oriented medical services."

Buescher, P.A. "Source of Prenatal Care and Infant Birthweight: The Case of a North Carolina County." SCHS Studies. No. 30. North Carolina Department of Human Resources. March 1986.

Study of impact of comprehensive prenatal care on birthweights of infants born to low-income women found that the comprehensiveness of the program had a positive impact on birthweight. Women receiving a comprehensive, coordinated program of prenatal care and ancillary services through the Guilford County public health department were compared to pregnant Medicaid-eligible women in the same county who received prenatal care primarily from private-practice physicains. The study reported that the percent of low birthweight births was 19.3% in the Medicaid group versus 8.3% in the comprehensive care/health department group, and

that "the ancillary services of the health department program appear to be most beneficial among those women who start prenatal care late." The study also found that, among the low-income women in the study, "not being on WIC independently increased the chances of having a low-weight birth by 60%."

Moore, T.R., et al. "The Perinatal and Economic Impact of Prenatal Care in a Low-socioeconomic Population." American Journal of Obstetrics and Gynecology. Vol. 154. 1986.

A study to assess the economic and perinatal impact of increasing number of deliveries of women without prenatal care showed similar maternal obstetric outcomes but greater morbidity among neonates of women receiving no care than among women in the Comprehensive Perinatal Program. "When the total inpatient hospital charges were tabulated for each mother-baby pair, the cost of perinatal care for the group receiving no care ($5,168 per pair) was significantly higher than the cost for patients in the Comprehensive Perinatal Program ($2,974 per pair, p .001) including an antenatal charge of $600 in the Comprehensive Perinatal Program. The excess cost for delivery of 400 women receiving no care per year in the study hospital was $877,600."

Levy, M. "Prenatal Care for Medicare Clients." New England Journal of Human Services. Vo. VI. Issue 2. 1986.

Review reports 1984 Kansas study examining data on 120,212 births during 1980-82. Five percent of women with adequate prenatal care had low birthweight infants compared with 11 percent for women with marginal care and 12 percent for women with inadequate care. A later study was conducted to determine whether low-income clients receiving the state's medical assistance program (including Medicaid and MediKan) obtained prenatal care, and if they did not, what the effect was on incidence of low birthweight births. The study found that nearly one-third of the clients on medical assistance did not receive adequate prenatal care; and among the 4,056 clients without illnesses or complications, the incidence of low birthweight was significantly lower for clients who had more prenatal visits. "Medical assistance costs for each infant requiring prenatal intensive care were $15,000 in 1985 compared with $700 for a healthy infant....[It] would cost about an additional $75,000 if all Medical Assistance clients received adequate prenatal care. Based on the Institute of Medicine's conclusions, in return for this expenditure the state would save $225,000 in medical costs for low birthweight infants."

Institute of Medicine. Preventing Low Birthweight. Washington, D.C. National Academy Press. 1985.

Review of studies shows that "overwhelming weight of the evidence is that prenatal care reduces low birthweight. This finding is strong enough to support a broad, national commitment to ensuring that all pregnant women, especially those at medical or socioeconomic risk, receive high-quality care."

"Prenatal care is most effective in reducing the chance of low birthweight among high-risk women, whether the risk derives from medical factors, sociodemographic factors, or both."

IOM's cost-benefit analysis shows that if the improved use of prenatal care "reduced that rate of low birthweight in the target population from the current 11.5% to only 10.76%, the increased expenditures for prenatal services would be approximately equal to a single year of cost savings in direct medical care expenditures for low birthweight infants in the target population. If the rate were reduced to 9 percent (Surgeon General's 1990 goal for a maximum low birthweight rate among high-risk groups), every additional dollar spent for prenatal care within the target group would save $3.38 in the costs of care for low birthweight infants because there would be fewer low birthweight infants requiring expensive medical care."

Korenbrot, C.C. "Risk Reduction in Pregnancies of Low-income Women: Comprehensive Prenatal Care through the OB Access Project." Mobius. Vol.4. 34-43. 1984.

The OB Access Project provided comprehensive obstetrical services for low-income women, including eight or more prenatal visits, health and nutrition assessment and education, and prenatal vitamins. Project evaluation showed lower incidence of low birthweight births among OB Access Project participants than those who received less intensive, standard or more variable care.

Sprague, H.A., et al. "The Impact of Maternity and Infant Care Programs on Perinatal Mortality." Perinatology-Neonatology. August 1983.

Evaluation of MIC project in Michigan showed dramatic declines in the rate of perinatal mortality among women receiving MIC services. "For patients whose most recent non-MIC pregnancies resulted in fetal or neonatal death, the rate of more than 300/1,000 was reduced significantly, to 48.8/1,000, under MIC. For those patients whose most recent non-MIC pregnancies did not result in fetal or neonatal death, previous rates of more than 60/1,000 were reduced significantly under MIC to 19.8/1,000."

Bondy, J. "Cost-Benefits of Selected Preventive Care Interventions." In Colorado's Sick and Uninsured: Background Papers. Colorado Task Force on the Medically Indigent. Boulder, CO. 1984. Also, "Cost-Benefit of Prenatal Care." Memorandum to Task Force Members. 1983.

Colorado study cites findings from local studies showing that women who received early and continuous prenatal care had a prematurity rate of 5%, while women who received no care experienced a prematurity rate of 28%. Further, the Colorado Health Department estimated that "if comprehensive prenatal care was provided to low-income women, $9 could be saved in medical expenses of premature infants, for every dollar spent in prenatal care, eleven state dollars would be saved."

O'Hare, D. Testimony at hearing, Children, Youth, and Families in the Northeast. Select Committee on Children, Youth, and Families. U.S. House of Representatives. July 25, 1983.

Testimony describes effects of MIC-FP program in New York City, which serves almost 10% of pregnant women. Based on a 1980 study of the program, it was estimated that "almost $2 million was saved in hospital costs alone by providing prenatal care and decreasing low-birth weight."

Sokol, R., et al. "Risk, Antepartum Care, and Outcome: Impact of a Maternity and Infant Care Project." Obstetrics and Gynecology. 56: 150-156, 1980.

Study in Cleveland found that women who received comprehensive prenatal care at the city's Maternity and Infant Care Project experienced 60% less perinatal mortality and a 25% lower rate of preterm deliveries than similar women not enrolled in the project. Maternal and Infant care project participants received more patient education, nutrition counseling, social service assessment and intervention, social services for adolescents and special follow-up services for those who miss appointments. Study suggests that these components of care are important for the outcomes.

Kessner, D. (ed.). Infant Death: An Analysis by Maternal Risk and Health Care. Contrasts in Health Status. Vol. 1. Institute of Medicine. Washington, D.C.: National Academy of Sciences, 1973.

Landmark study of births in New York City in 1968. Found significant association between adequacy of prenatal care and the percentage of low birthweight newborns in each of risk groups examined, controlling for ethnicity. Gains were greatest for those at highest risk because of socio-demographic or medical risk factors.

Cost Effectiveness

Lazarus, W. and West, K. 1987. op. cit.

Council on Maternal and Child Health, National Association for Public Health Policy. 1986. op. cit.

Moore, T.R., et al. 1986. op. cit.

Institute of Medicine. 1985. op. cit.

Korenbrot, C. "Comprehensive Prenatal Care as Medical Benefit: Expected Costs and Savings." University of California at San Francisco. 1984.

Study of comprehensive prenatal care program demonstrated cost savings of $2 in the first year of infant's life for every $1 spent on prenatal care in the project.

Taylor, J. "Prenatal and Postpartum Maternity Care as a Cost Containment Measure." Michigan Department of Public Health. Unpublished paper. 1984.

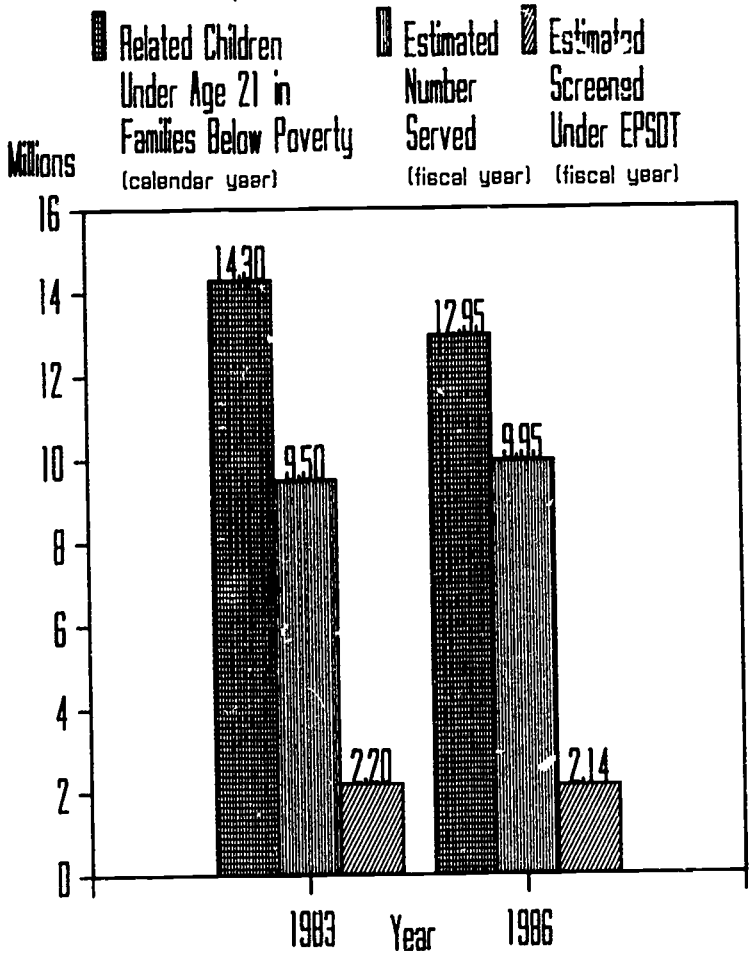
Cost benefit analysis of providing prenatal care shows that for every $1 spent, an estimated $6.12 could be saved in newborn intensive care costs in Michigan.

Bondy, J. 1983. op. cit.

O'Hare, D. 1983. op. cit.

Medicaid

Participation of Dependent Children Under 21



Source: Participation: U.S. Dept. of Health & Human Services. Health Care Financing Admin.
Related Children Under Age 21 in Families Below Poverty: Based on March Current Population Survey. Computed by CRS.

Note: Medicaid service category "dependent children under 21" include those in institutions or otherwise categorically eligible whose family resources may not fall below poverty.

MEDICAID

Medicaid, permanently authorized by Title XIX of the Social Security Act as amended, is a federal-state matching program providing medical assistance to certain low-income persons who are aged, blind, disabled, members of families with dependent children, or certain other poor pregnant women and children. In 1982, it was calculated that Medicaid represented 55% of all public health funds spent on children. The largest single hospital inpatient service funded by Medicaid is routine newborn deliveries.

During the last several years, legislation has expanded services under the program. In 1985, the Consolidated Omnibus Budget Reconciliation Act (COBRA) mandated previously optional coverage of maternity services for all pregnant women with family income and resources below need standards for AFDC (Aid to Families with Dependent Children). In 1986, under the Omnibus Budget Reconciliation (OBRA), states were given the option of extending Medicaid eligibility to all pregnant women, infants under the age of one and children up to age five, providing that family income does not exceed the federal poverty level. Beginning July 1, 1988, states will be allowed to extend Medicaid eligibility to pregnant women, and young children with incomes up to 185 percent of the federal poverty standard.

In calendar year 1986, there were 12.95 million related children in families below the poverty line. In FY 1986, 9.95 million dependent children under 21 received Medicaid services, including 2.14 million screened under Early and Periodic Screening, Diagnosis, and Treatment program (EPSDT). (Children counted in the service category "dependent children under 21" include those in institutions or otherwise categorically eligible whose family resources may not fall below poverty standards.)

Evaluations of the effects of Medicaid coverage show

Improved health outcomes for low-income children and families

- Reduction of neonatal and infant mortality rates
- Fewer abnormalities at periodic exams among children who receive EPSDT preventive services than among those not receiving them

Cost effectiveness

- Health care costs are lower for children who receive preventive EPSDT services than for those who do not; Ohio Department of Public Welfare found annual Medicaid savings of $250 per EPSDT participant.
- Medicaid-supported, comprehensive prenatal care resulted in cost savings of $2 in the first year of infant's life for every $1 spent.

STUDIES

Improved Health Outcomes

Levy, M. "Prenatal Care for Medicare Clients." New England Journal of Human Services. Vol. VI. Issue 2. 1986.

Review reports 1984 Kansas study examining data on 120,212 births during 1980-82. Five percent of women with adequate prenatal care had low birthweight infants compared with 11 percent for women with marginal care and 12 percent for women with inadequate care. A later study was conducted to determine whether low-income clients receiving the state's medical assistance program (including Medicaid and MediKan) obtained prenatal care, and if they did not, what the effect was on incidence of low birthweight births. The study found that nearly one-third of the clients on medical assistance did not receive adequate prenatal care; and among the 4,056 clients without illnesses or complications, the incidence of low birthweight was significantly lower for clients who had more prenatal visits. "Medical assistance costs for each infant requiring prenatal intensive care were $15,000 in 1985 compared with $700 for a healthy infant. Based on the Institute of Medicine's conclusions, in return for this expenditure the state would save $225,000 in medical costs for low birthweight infants."

Institute of Medicine. Preventing Low Birthweight. Washington, D.C.: National Academy Press. 1985.

IOM review of research on preventing low birthweight concludes:

"Medicaid increases participation in prenatal care by lowering financial barriers to such services. And because participation in prenatal care is associated with improved birthweight, efforts to expand and strengthen the Medicaid program should be part of a comprehensive program to reduce the nation's incidence of low birthweight. Decreasing the participation of pregnant women in the Medicaid program by such means as changing welfare or Medicaid eligibility criteria serves only to undermine the purpose of the program and, among other things, threatens appropriate use of prenatal care and increases costs for low birthweight infant care. Changes in the program should be dedicated to enrolling more, not fewer, indigent, eligible women in the program and to providing them with early and regular prenatal care of high quality."

Keller, W. "A Study of Selected Outcomes in the Early and Periodic Screening Diagnosis and Treatment Program in Michigan." Public Health Reports. March-April 1984.

Children receiving EPSDT preventive services exhibit fewer abnormalities at periodic exams than those who do not receive such benefits. Overall health care costs for children participating in the program are significantly lower than for those who do not participate, even when all the costs of administering EPSDT are taken into account.

Korenbrot, C. "Comprehensive Prenatal Care as a Medical Benefit: Expected Costs and Savings." University of California, San Francisco. 1984.

Research project involving the provision of comprehensive health care to pregnant women demonstrated improved health outcomes for babies whose mothers participated in the project and cost savings of $2 in the first year of infant's life alone for every $1 spent on prenatal care through the project.

Hadley, J. More Medical Care, Better Health? Urban Institute, Washington, D.C. 1983.

State Medicaid coverage policies for pregnant women and children have helped in the reduction of neonatal and infant mortality rates since 1966.

Budetti, P., et al. "Federal Health Program Reforms: Implications for Child Health Care." Milbank Memorial Fund. 1982.

Medicaid represents 55% of all public health funds spent on children.

National Center for Health Statistics. Advance Data: Expected Principal Source of Payment for Hospital Discharges. U.S. 1977.

The largest single hospital inpatient service funded by Medicaid is routine newborn deliveries.

Cost Effectiveness

Levy, M. 1986. op. cit.

Keller, W. 1984. op. cit.

Korenbrot, C. 1984. op. cit.

Bureau of Program Operations, Health Care Financing Administration, U.S. Department of Health and Human Services. Early and Periodic Screening, Diagnosis, and Treatment (EPSDT) Program Report: Fiscal Year 1983. September 26, 1983.

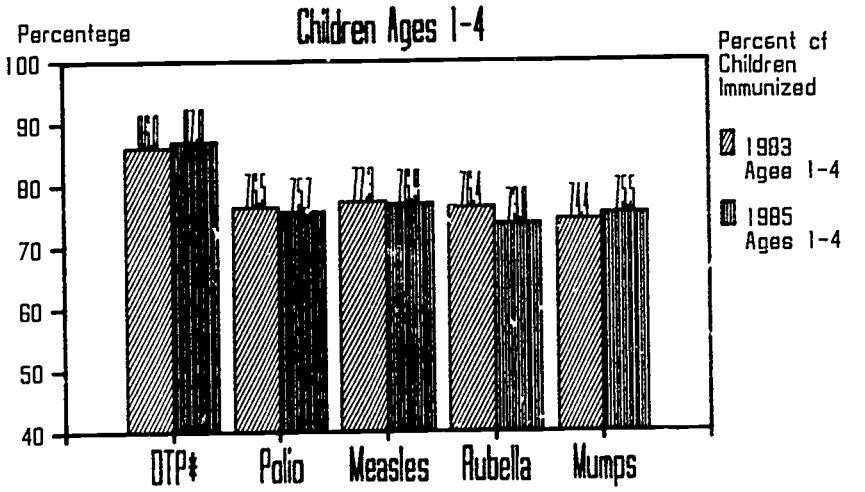
Report cites cost-benefit evaluations from several states:

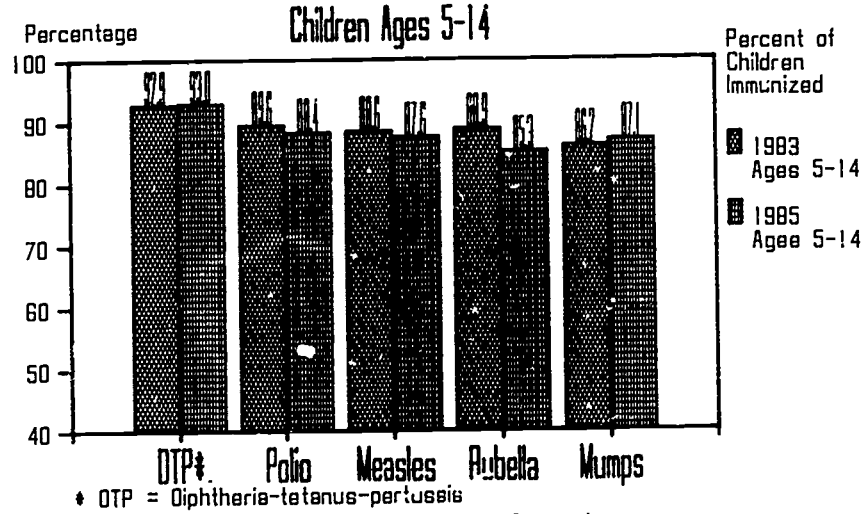
"Bailey of North Carolina's Department of Human Resources, examined costs for 1980-82, after excluding the experience of over 1,000 children residing in mental retardation centers and found that annual Medicaid savings per participant were $29.58, $14.57 and $30.20 for 1980, 1981 and 1982 respectively....McMurray of the Ohio Department of Public Welfare examined costs for 1982 and found annual Medicaid savings per participant of $250."

"Administrative Petition to Reduce the Incidence of Low Birth Weight and Resultant Infant Mortality." An Administrative Petition to the United States Department of Health and Human Services. July 29, 1983. Testimony at hearing, Prevention Strategies for Healthy Babies and Healthy Children. Select Committee on Children, Youth, and Families. U.S. House of Representatives. June 30, 1983.

Petitioner's analysis of cost savings showed that the federal government could save more than $361 million per year in Medicaid costs by providing comprehensive prenatal care to all low-income women.

Childhood Immunization Program





* DTP = Diphtheria-tetanus-pertussis

Source: U.S. Centers for Disease Control, Atlanta, GA, United States Immunization Survey, annual

CHILDHOOD IMMUNIZATION

The Childhood Immunization Program, currently authorized under P.L. 100-177, which amended Section 317(J) of the Public Health Service Act, helps states and localities to establish and maintain immunization programs for the control of vaccine-preventable childhood diseases, including measles, rubella, poliomyelitis, diphtheria, pertussis, tetanus and mumps. Since 1985, a new vaccine (haemophilus-B vaccine) to prevent childhood meningitis has been approved and is among the recommended vaccination series.

The immunization assessment of the children against the major diseases of rubella, mumps, measles, polio, diphtheria, tetanus and pertussis has shown:

Dramatic declines in the incidence of many diseases, because of widespread immunization

- Decrease in number of reported cases of rubella by nearly 99% compared to pre-vaccine years (pre 1969)
- Drop in reported cases of mumps by 97.2%, from 105,000 to 2,900, from 1970-1985
- Decrease in reported cases of measles, polio and diphtheria by more than 99%, from 1960 to 1985
- Decrease in reported cases of pertussis by 77.7% and tetanus by 80.1%, from 1960 to 1985

Continued serious threat of the major childhood diseases in absence of immunization; Drop in percent of young children immunized against most diseases in last several years

- Percent of children 1-4 years old immunized against polio, measles, rubella and mumps declined from 1983 to 1985. Overall, levels of immunization for preschool-age children worsened or showed no improvement between 1980 and 1985
- In 1979 the Swedish government stopped producing the whole cell pertussis vaccine. Since then, Swedish children have not been vaccinated against pertussis, and in 1982 and 1983 a severe whooping cough epidemic broke out.
- Most of the outbreaks of measles in the U.S. during 1983 were among age groups in which there are a number of unvaccinated individuals. In 1984 the incidence of measles was up 69 percent from the preceding year, from 1,497 to 2,534 cases. In 1985 the number of cases rose to 2,822, and provisional dsta for 1986 show an increase to 6,300.

Considerable variation in immunization by race and by income

Cost effectiveness

- Benefit-cost ratio for the MMR (measles, mumps, rubella) immunization program is approximately 14:1.
- In 1984, it was estimated that for every dollar spent on the Childhood Immunization Program, the government saves $10 in medical costs.
- CDC (Centers for Disease Control) study indicated that the $180 million spent on a measles vaccination program saved $1.3 billion in medical and long-term care by reducing hearing impairment, retardation and other problems.

STUDIES

Reductions in Childhood Diseases Because of Immunization

U.S. Department of Commerce. Bureau of the Census. Statistical Abstract of the United States 1987. Tables 162 and 163.* Statistical Abstract of the United States, 1985. Tables 180 and 181.

In 1985, the percent of children, ages 1-4 immunized against specific diseases stood at 87.0% for diphtheria-tetanus-pertussis, 75.7% for polio, 76.9% for measles, 73.8% for rubella, and 75.5% for mumps. For children ages 5-14, the percent immunized was 93.0%, 88.4%, .6%, 85.3%, and 87.1% for the specified diseases respectively.

This contrasts with 1983 when the percent of children, ages 1-4 immunized against specific diseases, stood at 86% for diphtheria-tetanus-pertussis, 76.5% for polio, 77.3% for measles, 76.4% for rubella; and 74.4% for mumps. For children ages 5-14, the percent immunized was 92.9%, 89.6%; 88.6%, 88.9% and 86.2% for the specified diseases respectively.

The decrease in reported cases of diseases since early reporting shows the effectiveness of childhood immunizations. In 1960, 918 cases of diphtheria, 14,800 cases of pertussis, and 368 cases of tetanus were reported. In 1982, there were two reported cases of diphtheria, 1,900 of pertussis and 88 of tetanus. Provisional data for 1985 indicate no change in the number of reported cases of diphtheria, an increase in reported cases of pertussis to 3,300, and a slight decline in tetanus to 71 reported cases.

Polio dropped from 3,190 cases in 1960 to 8 in 1982 and to 5 in 1985. Reported cases of mumps also continued to decline from 105,000 in 1970, down to 5,300 in 1982 and 2,900 in 1985. Cases of rubella declined from 56,000 in 1970 to 2,300 in 1982, falling further to about 600 cases in 1985.* Reported cases of measles for 1985, while remaining very low compared to levels recorded in 1960 and 1970, rose from 1982 levels. From 1960 to 1982, cases of measles dropped from 441,700 to 1,700; for 1985, 2,700 cases were reported preliminarily.

*Error in 1987 Statistical Abstracts in number of reported rubella cases provisionally reported in 1985. Figures cited here reflect correction provided by Centers for Disease Control.

Johnson, K. Who is Watching Our Children's Health? The Immunization Status of American Children. Washington, D.C.: Children's Defense Fund. December 1987.

Examination of immunization status of children found "General levels of immunization for preschool-age children worsened or showed no improvement between 1980 and 1985. For example, the proportion of one- to four-year-olds receiving no doses of polio vaccine rose by 40% for children of all races and 80% for nonwhite children; and the

percentage of children who were not immunized against rubella before age five rose during this period...."

"While there is no danger of soon returning to the levels of disease experience before 1970, during the 1980-1985 period the nation experienced a significant increase in the number of reported cases of measles, mumps, and pertussis...."

"The number of cases of measles reported in the U.S. has risen dramatically since 1983, and there were more cases in 1986 than in any year since 1980. Preschool-age children had the highest reported rates in 1985 and 1986. CDC found that 83% of the cases among children age 16 months to four years were preventable through adequate immunization."

Nkowane, B.M., et al. "Measles Outbreak in a Vaccinated School Population: Epidemiology, Chains of Transmission and the Role of Vaccine Failures." American Journal of Public Health. Vol. 77. No. 4. April 1987.

A study of a measles outbreak in a high school where the documented vaccination level was 98 percent showed that persons who were not immunized or had received immunization at less than 12 months of age had higher attack rates than those immunized on or after 12 months of age. "Vaccine failures among apparently adequately vaccinated individuals were sources of infection for at least 48% of the cases in the outbreak....The outbreak subsided spontaneously after four generations of illness in the school and demonstrates that when measles is introduced in a highly vaccinated population, vaccine failures may play some role in transmission but that such transmission is not usually sustained." (Article abstract)

White, C.C., et al. "Benefits, Risks and Costs of Immunization for Measles, Mumps and Rubella." American Journal of Public Health. Vol. 75. No. 7. 739-744. July 1985.

Researchers compared the actual and estimated morbidity, mortality, and costs attributable to measles, mumps, and rubella with having or not having a childhood immunization program. "Without an immunization program, an estimated 3,325,000 cases of measles would occur as compared to 2,872 actual cases in 1983 with a program. Instead of an expected 1.5 million rubella cases annually, there were only 3,816 actual cases. Mumps cases were lowered from an expected 2.1 million to 32,850 actual cases. There are comparable reductions in disease-associated complications, sequelae, and deaths."

"Without a vaccination program, disease costs would have been almost $1.4 billion. Based on the actual incidence of disease in 1983, estimated costs were $14.5 million. Expenditures for immunization, including vaccine administration costs and the costs associated with vaccine reactions, totaled $96 million. The resulting benefit-cost ratio for the MMR immunization program is approximately 14:1. The savings realized due to the use of combination rather than single antigen vaccine total nearly $60 million." (Article abstract)

Centers for Disease Control. Rubella and congenital rubella -- United States, Reports for 1980-1983; 1983; 1983-84. Cited in Morbidity and Mortality Weekly Report. "Elimination of Rubella and Congenital Rubella Syndrome -- United States." 34: 51. February 1985.

Rubella vaccine was licensed in 1969, and more than 123 million doses of the vaccine have been given since then, "successfully preventing epidemics of rubella and congenital rubella syndrome (CRS) from occurring in the U.S. Compared to pre-vaccine years, the number of reported cases has decreased 98.7% overall, with 90% or higher declines recorded for all age groups."

Uneven Immunization

Johnson, K. 1987. op. cit.

University of North Carolina (UNC) Child Health Outcomes Project. Monitoring the Health of America's Children: Ten Key Indicators. September 1984.

National Center for Health Statistics (NCHS) data show percent of preschool children "who are adequately immunized against childhood disease varies greatly by race and income. In 1981, the portion of white preschoolers immunized was 10 to 21 percentage points higher than the portion of nonwhites immunized (percent varies by disease for which immunization given). Similarly, in 1979, the portion of poverty-area, central-city preschoolers who were immunized ranged from 12 to 20 percentage points below the portion of nonpoverty, noncentral-city preschool children immunized."

Administration for Children, Youth and Families, Department of Health and Human Services. "Project Head Start. Performance Indicator Report System. Annual Report for School Year Ending 1983." ACYF, DHHS 1983. Cited in UNC Child Health Outcomes Project. Monitoring the Health of America's Children: Ten Key Indicators. September 1984.

"In contrast to the trend for most low-income children, preschoolers participating in the Head Start program have higher than average immunization rates. For program year ending 1983, 93.5% of children in the Head Start program nationwide had complete or up-to-date immunizations."

Continued Threat of Disease in Absence of Immunization

Johnson, K. 1987. op. cit.

Centers for Disease Control. Measles -- United States, 1986. Morbidity and Mortality Weekly Report. Vol. 36. No. 20. May 29, 1987.

Centers for Disease Control reported that the provisional total of 6,273 cases of measles for 1986 "represents a 2.2-fold increase over the 2,822 cases reported in 1985, but is still 98% below the reported incidence in prevaccine years." According to a CDC review of detailed information on 6,255 of the cases, 36.4% were classified as preventable. "The highest proportion of preventable cases occurred among persons who were not of school age: 83.2% of cases among children 16 months-4 years of age were preventable, as were 72.2% of cases among persons 20-29 years of age. In contrast, 29.4% of cases among school-aged persons (5-19 years of age) were preventable."

It was further noted that "since measles vaccine was licensed in 1963, the incidence of measles has declined to approximately 1%-2% of that reported in the prevaccine era. However, increases in the number of reported cases have occurred annually since the record low in 1983, when 1,497 cases were reported. There were more cases in 1986 than in any year since 1980, when 13,506 cases were reported."

Centers for Disease Control. Measles -- United States, 1984. Morbidity and Mortality Weekly Report. Vol. 34. No. 21. May 31, 1985.

Centers for Disease Control reported 69% increase in cases from 1983 through 1984. Reported measles cases rose from 1,497 in 1983 to 2,534 in 1984. 874 -- 34% -- of last year's cases were classified as preventable.

Koshland, D.E. "Benefits, Risks, Vaccines, and the Courts." Science. (editorial) Vol. 227. No. 4692. March 15, 1985.

"When DPT vaccine fell into disuse in England and Japan during the 1970's the death rate shot up (for example, during one 2-year period in England 36 children died per 100,000 who were infected with whooping cough)."

Sun, M. "Whooping Cough Vaccine Research Revs Up," Science, Vol. 227, March 8, 1985.

In 1979 the Swedish government stopped producing the whole cell pertussis vaccine, and since then, Swedish children have not received pertussis vaccination. In 1982 and 1983, a severe whooping cough epidemic broke out.

American Public Health Association. "Incidence of Measles Fell Again in 1983." The Nation's Health. 14(Apr): 4. Cited in UNC Child Health Outcomes Project. Monitoring the Health of America's Children" Ten Key Indicators. September 1984.

"Most of the outbreaks of measles during 1983 were among preschoolers under age 5 or among college students -- age groups in which there are a number of unvaccinated individuals since they have not been caught in the push to ensure all school children are immunized."

Cost Effectiveness

Centers for Disease Control. U.S. Department of Health and Human Services. Communications regarding current costs of immunization. December 1987 and August 1985.

Currently, the federal contract price of a full immunization series is estimated to be about $57. This includes cost of vaccine (4 doses of polio vaccine @ $1.43/dose; 5 doses of DTP @ $7.70/dose; and 1 dose of MMR @ $10.67/dose). Since 1985, a new vaccine for haemophilus influenza has been approved and added to the series. The haemophilus-B vaccine, given at 18 or 24 months of age, costs $2.17/dose.

In 1985, the cost of the series was estimated to be about $31. This included cost of vaccine (4 doses of polio vaccine @ $.804/dose: 5 doses of DTP @ $2.21/dose; and 1 dose of MMR @ $6.85/dose), and program operation costs which were estimated at about one-third of total cost per series.

White, C.C., et al. 1985. op. cit.

UNC Child Health Outcomes Project. 1984. op. cit.

Report summarizes several studies concerning cost effectiveness:

"For every dollar spent on the Childhood Immunization Program, the government saves $10 in medical costs. For one million 2-year-olds, rubella vaccination would save "9.8 million in net medical costs and an addition $7.4 million in productivity. The cost of lifetime institutional care for a child left retarded by measles is between $500,000 and $1 million. Centers for Disease Control study indicated that the $180 million spent over several years on a measles vaccination program saved $1.3 billion in medical and long-term care by reducing hearing impairment, retardation and other problems".

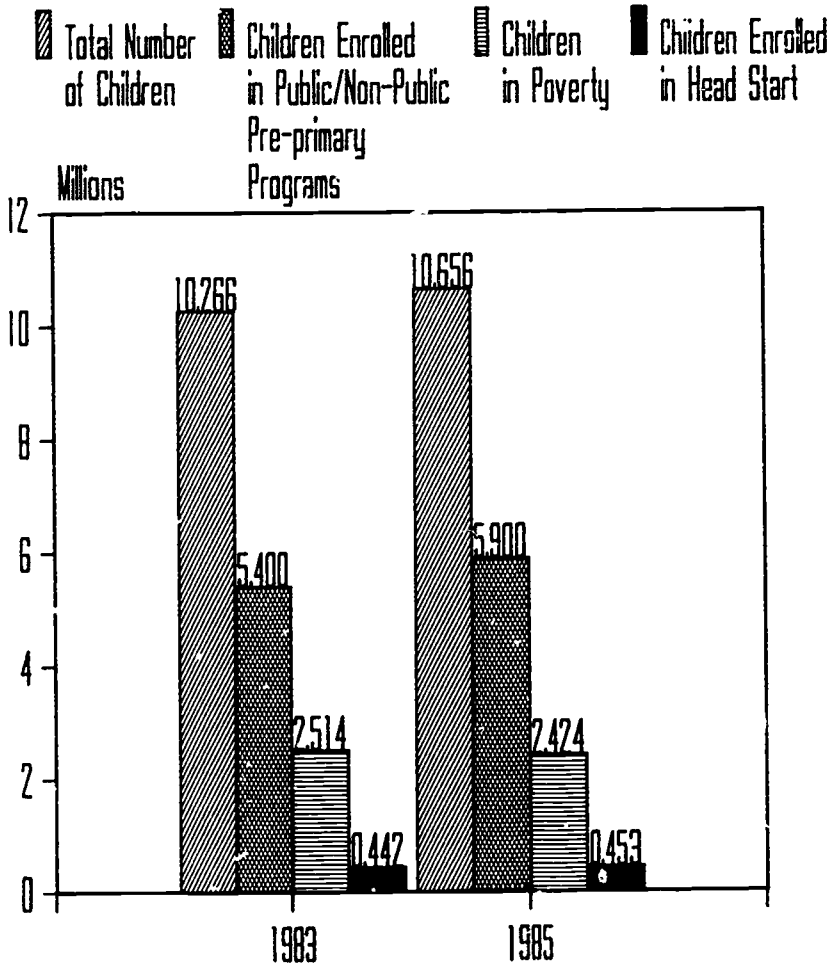
At government contract prices, the total cost for vaccines necessary to complete a series of immunizations in a child...was less than $10 in 1983.

Kaplan, J.P., White, C.C. An update on the benefits and costs of measles and rubella immunization. In proceedings of the symposium, "Conquest of agents that endanger the brain." Baltimore, MD, October 28-29, 1982. Cited in Morbidity and Mortality Weekly Report. 34:5. Feb. 1985. p. 65.

It is estimated that each case incurs an average lifetime cost of over $200,000.

Preschool Education

Children Ages 3-5



Source: U.S. Dept. of Commerce, Bureau of the Census
U.S. Dept. of Health and Human Services, Admin. for Children, Youth and Families, Head Start Bureau

PRESCHOOL EDUCATION

The number and array of preschool education programs, aimed at meeting developmental and educational needs of preschool children and enhancing the likelihood of later school success, have grown dramatically in recent years. This review covers the broad array of early intervention and preschool education programs and includes Head Start, established in 1965 as a national program providing enriched early childhood education for low-income children. Head Start also provides a range of other services, including health, nutrition and social services. The program emphasizes parent and community involvement in the development and operation of the program. Head Start is currently authorized under P.L. 99-425.

Evaluations to date have largely examined effects of program participation on children at risk due to economic or educational disadvantage. More recent evaluations of early intervention efforts with general populations of parents and young children have shown gains for children and their families.

Research on the effects of early childhood education during the last 20 years reports

Increased school success of children who attended preschool compared with children who had not

- Better grades, fewer failing marks, lower retention in grade, and fewer absences in elementary school
- Less need for special education services and fewer placements in special education classes
- Improved literacy, and curiosity in school
- Greater likelihood of completing high school
- Greater likelihood of continuing education beyond high school

Increased employability

Reduction in dependence on public assistance

Decreased criminal activity

Improvement in students' self confidence, self-esteem and expectations

Positive effects for parents and family

Cost effectiveness

- $1 investment in preschool education returns $6 in savings because of lower special education costs, lower welfare and higher worker productivity, and lower costs of crime.
- Researchers estimate that program benefits yield a six-fold return on one-year programs and three-fold return on two-year programs. For a cost of $5000 per participant, total benefits to taxpayers from the program were calculated at $28,000 per participant.

STUDIES

Increased School Success

Lally, J.R., et al. "The Syracuse University Family Development Research Program: Long-Range Impact of an Early Intervention with Low-Income Children and Their Families." Powell, D.R. (ed.) Parent Education and Support Programs: Consequences for Children and Families. Ablex. In Press.

According to a follow-up study 10 years later, an extensive program of day care and family services over the first 5 years of children's lives resulted in a reduction in rate of delinquency in adolescence and higher expectations about further education among all program participants, and better academic performance among participating girls. Children of the low-income families who participated had a 6% rate of juvenile delinquency, compared to a 22% rate for children in a control group. Moreover, the offenses committed by children in the control group were considerably more severe, including burglary, robbery, and physical and sexual assault, unlike the experimental group. The study estimated that administrative and detention costs associated with the cases were $12,000 for the program group and $107,000 for the control group.

Compared to control-group children, program group children also were more likely to expect education to be a continuing part of their lives: 53% of the program group but only 28% of the controls anticipated they would be in school in the next 5 years. Effects on academic achievement were seen significantly among girls: Three-fourths of the program group girls had C averages or better, none was failing, and none had more than 20 school absences during the previous years. In contrast, more than half the controls had averages below C; 16% were failing; and 31% had more than 20 absences.

Schweinhart, L.J. Testimony before the California State Senate Select Committee on Infant and Child Care and Development. October 29, 1987.

Schweinhart testified that high-quality preschool programs for children who live in poverty help to prevent school failure, dropping out of school, juvenile delinquency, and illiteracy, and in the long run, save taxpayers considerably more than they originally cost. Follow-up studies of participants in the Perry Preschool Program at age 19 found that preschool participation had increased the percentage of persons who were literate, employed, and enrolled in post-secondary education, whereas it had reduced the percentages who were school dropouts, labeled mentally retarded, on welfare, or arrested for delinquent and criminal activity. This effort combined with other early intervention research shows that high-quality early childhood programs epare poor children better for the intellectual and soc.al demands of schooling, and that preschool participation can lead to greater success and social responsibility in adult life. The cost/benefit analysis showed a six-fold return on one-year

programs and a three-fold return on two-year programs. For a cost of $5,000 per participant, total benefits to taxpayers from the program were about $28,000 per participant.

Horacek, H.J., et al. "Predicting School Failure and Assessing Early Intervention with High-Risk Children." Journal of the American Academy of Child and Adolescent Psychiatry. Vol. 26. No. 5. 1987.

Study of school performance of 90 children identified at birth as being at high risk for school failure based on social and economic variables found that high-risk children experienced 3.8 times the rate of grade failure (50%) of their average-risk peers (13%); educational intervention reduced the incidence of grade failure most successfully when delivered as both a preschool and a school-age program; and achievement test scores in reading and math show a parallel beneficial effect from intervention."

"South Carolina: Plan for Early Childhood Development and Education." Interagency Coordination Council for Early Childhood Development and Education, Office of the Governor. South Carolina. 1986. And, Taylor, J. "Early Childhood Education Programs in South Carolina's Public Schools." South Carolina Department of Education. November 27, 1985.

The Half-Day Child Development Program for Four-Year-Olds in South Carolina, created under the State's Education Improvement Act of 1984, provides for half-day child development programs for four-year-olds, "focusing on areas with a significant number of students scoring 'not ready' on a first grade readiness test." The efforts so far have shown positive effects on the preparedness of first graders: the number considered ready for school has risen from 60% in 1979 to 75% in 1985; those reading at grade level increased by 16%, and third graders tested in 1985 showed an almost 30% increase over 1979 scores; math scores showed a 20% increase from 1981 to 1985.

Pfannenstiel, J.C. and Seltzer, D.A. "New Parents as Teachers Project: Evaluation Report." Missouri Department of Elementary and Secondary Education. 1985.

The Parents as Teachers program in Missouri supports parents in their role as children's first teachers and is designed to prevent failure in school and promote the well-being of families. Results of independent evaluation show that program children score significantly higher on all measures of intelligence, achievement, comprehension, and verbal and language ability. Their scores ranked at the 75th percentile in mental processing and at the 85th percentile in school-related achievement, compared to the comparison group which scored at the 55th and 61st percentiles, respectively; parents were more knowledgeable about child-rearing practices and child development than the comparison group; parents and children performed well regardless of demographic or economic status; and program staff were successful in intervening and helping to improve at-risk situations.

Reece, C. "Head Start at 20." Children Today. Vol. 14. No. 2. March-April 1985.

Discussion of Head Start program as it begins its 20th year of operation states

"The findings are clear. Head Start produces substantial gains in children's cognitive and language development, school readiness and achievement. Head Start children are far less likely to be held back a grade or assigned to a special education class then similar children who did not attend Head Start, and Head Start children have been found to be more sociable and assertive than comparable youngsters. Children in Head Start obtain markedly higher levels of health care than children not in the program, have fewer absences from school and perform better on physical tests. In many studies, parents of Head Start children report important changes in their educational or economic status leading to greater family self-sufficiency."

Deutsch, M., et al. "Long-term Effects of Early Intervention: Summary of Selected Findings." Unpublished paper. March 1985. Also reported in The New York Times. April 1985.

Study found short- and long-term benefits of enriched preschool program for inner-city, poor children. Program participants showed significant changes in literacy, curiosity, and improved orientation to general environment; 58% of the program participants finished high school compared to 40% of controls; 39% of participants go on to college or specific vocational training compared to 28% of controls; and 49% of program participants gain employment compared to 24% of the controls. Based on results of interviews and personality assessments, program participants showed greater initiative, assertiveness, self-esteem, and ego strength.

Pierson, D., et al. "A School-Based Program from Infancy to Kindergarten for Children and their Parents." Personnel and Guidance Journal. Vol. 62. No. 8. April 1984.

The Brookline, Massachusetts Early Education Project, a school-based program lasting from infancy to kindergarten for children and their parents, provided parent education and support, diagnostic monitoring and education programs for children. Evaluation of children in the second grade who had participated in the program as preschoolers found that program children were half as likely as the comparison group to experience difficulty in learning during second grade, and program parents initiated 40% more contacts with second grade teachers than comparison group parents.

Berreuter-Clement, J., et al. Changed Lives. The Effects of the Perry Preschool Program on Youths through Age 19. Monographs of the High/Scope Educational Research Foundation. Number Eight. Ypsilanti, MI. 1984.

The Perry Preschool Study shows that an enriched early childhood education improves school success; increases

employability and lowers need for public welfare; helps to prevent criminal activity and is exceptionally cost effective. With regard to school success, persons who had attended preschool had better grades, fewer failing marks, and fewer absences in elementary school; they required fewer special education services and were more likely to continue their education or get vocational training than their no-preschool counterparts.

By age 19, the preschool group's employment experience was significantly better than the experience of the no-preschool groups. Study participants who attended preschool were more likely to be employed at the time of the age-19 interview, and they were employed more months of the calendar year in which they became 19.

Researchers calculated that the value of benefits beyond age 19 of participants exceeds seven times the cost for one year of preschool (in 1981 dollars). They estimate that a $1 investment in preschool education returns $6 in taxpayer savings because of lower special education costs, lower public welfare costs, higher worker productivity and lower costs of crime (Tables 26 and 27).

Weikart, D. Testimony at hearing, Prevention Strategies for Healthy Babies and Healthy Children. Select Committee on Children, Youth, and Families. U.S. House of Representatives. Washington, D.C. June 30, 1983.

Testimony reported findings of the High/Scope Perry preschool project, indicating a higher rate of school success and employment, as well as lower arrest rate and lesser likelihood of appearing on welfare rolls. A summary of the cost-benefit analysis states

"For every dollar invested in one year of high quality pre-school education for economically disadvantaged children, the returns to society over the lifetime of the subject are approximately: $1 in reduced public school education costs; 50¢ in reduced crime costs; 25¢ in reduced cost of welfare administration (in addition $2.25 in reduced taxpayer's cost of welfare); and $3 in increased lifetime earnings (75¢ in increased tax revenues)....Return on investment to society for each $1 is $4.75."

Hubbell, R. Head Start evaluation, synthesis, and utilization project. ACYF, DHHS. Publication No. OHDS 83-31184. Washington, D.C., 1983 Report.

Early report showed that Head Start graduates do better in school than those who did not attend Head Start, when considering such factors as non-retention in grade, placement in regular classes as opposed to special education, and teacher ratings.

Lazar, I., et al. Lasting effects of early education. Monographs of the Society for Research in Child Development, 47(2-3, Serial No. 195), 1982.

Study of the long-term effects of early childhood education experience on children from low-income families, based on secondary analyses of data from several preschool programs. Results indicate effects in a number of areas: school competence, developed abilities, children's attitudes and values, and impact on the family. Findings include the following:

Children who attended programs were significantly more likely to meet their school's basic requirements;

Across six programs whose data could be pooled for the analysis, there was a significantly lower rate of assignment to special education among children in the early intervention group (13.8%), compared to the control group (28.6%);

Across eight projects, the program group had a lower median rate of grade retention of 25.4% compared to 30.5% in the control group;

Program participants surpassed controls on I.Q. tests for several years after the program had ended;

Children who had attended early education programs were significantly more likely than were controls to give achievement-related reasons, such as school or work accomplishments, for being proud of themselves;

Across all projects, mothers of program graduates were more satisfied with their children's school performance than were mothers of control children. Mothers of program participants also had higher aspirations for their children.

In one state, program families were less likely to use foster care services.

Zigler, E., et al. Project Head Start. New York: The Free Press, 1979.

Review of the history and effects of Head Start after 13 years of program operation in 1979. It summarizes aspects of Head Start's success as follows.

"At the simplest [illegible] it has provided nutritious meals, vaccinations, [illegible] care [illegible] children who would otherwise not [illegible] them. The improved physical health of Head [illegible] ildren, is a concrete, exciting, and too often ign[illegible] accomplishment".

Many studies of Head Start have focused on the intellectual and academic development of those children who participated, disregarding the children's social and emotional development or the program's impact on communities. Repeated educational evaluations of Head Start have left no doubt that it has striking short-term affects on children's social and cognitive development.

Parents who participated in Head Start were able to exercise control over their own lives by influencing decisions about the care of their children. Many parents

gained career training and even employment. Others learned how to affect political institutions. According to the parents' own testimony, their improved self-esteem changed their relations to their children and their communities."

Increased Employability

Schweinhart, L.J. 1987. op. cit.

Deutsch, M., et al. 1985. op. cit.

Berreuter-Clement, J., et al. 1984. op. cit.

Reduced Delinquency and Dependence on Public Assistance and in Reports of Criminal Activity

Lally, J.R., et al. In Press. op. cit.

Schweinhart, L.J. 1987. op. cit.

Berreuter-Clement, J., et al. 1984. op. cit.

Weikart, D. 1983. op. cit.

Improvement in Students' Views of Themselves; Increased Maternal Satisfaction

Lally, J.R., et al. In Press. op. cit.

Lazar, I., et al. 1982. op. cit.

Positive Effects for Parents and Family

Reece, C. 1985. op. cit.

Lazar, I., et al. 1982. op. cit.

Zigler, E., et al. 1979. op. cit.

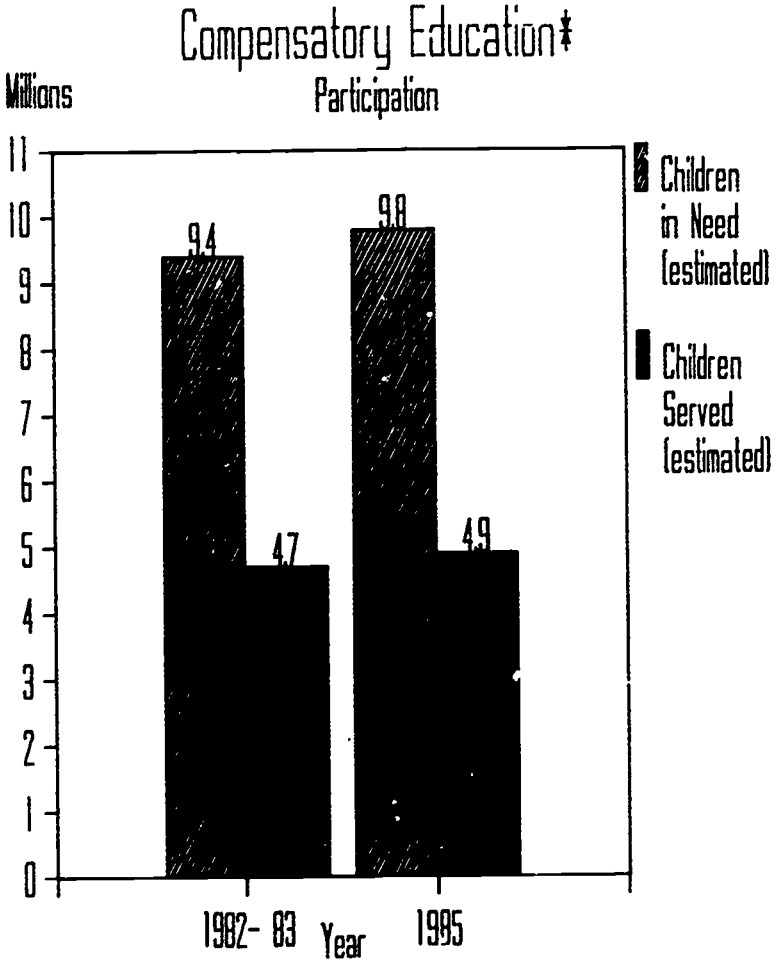
Cost Effectiveness

Lally, J.R., et al. In Press. op. cit.

Schweinhart, L.J. 1987. op. cit.

Berreuter-Clement, J., et al. 1984. op. cit.

Weikart, D. 1983. op. cit.



*CHAPT. 1 - LEA GRANT PROGRAM. Educationally disadvantaged pupils at preschool, elementary & secondary levels of education.

Source: Children in Need: Computed based on estimated percent served.
Children Served: U.S. Dept. of Education, Chapt. 1 Office.

COMPENSATORY EDUCATION

Title I of the Elementary and Secondary Education Act of 1965 was the federal government's premier effort to provide compensatory education services to educationally disadvantaged and low-income students. In 1981 the program was substantially revised and became Chapter 1 of the Education Consolidation and Improvement Act, under which the program is currently authorized. Reauthorization of federal elementary and secondary education programs, including compensatory education, is pending.

4.9 million students -- about 50% of those estimated to be in need -- received Chapter 1 services in 1985. Approximately 14% of all students from kindergarten through eighth grade are enrolled in Chapter 1.

Studies of the effects of compensatory education show

Academic gains

- Achievement and maintenance of statistically significant gains in reading and mathematics over a year
- Narrowing of the achievement gap between black and other elementary students
- Achievement gain drop when Title I assistance terminated
- Improvement in achievement as a result of substantial parent involvement

Cost effectiveness

- It costs about $750 to provide a year of compensatory education to a student in contrast to $3,700 in average per student expenditure for a year, the minimum cost for a student repeating a grade.

STUDIES

Compensatory Education Results in Siginificant Achievement Gains

Congressional Budget Office. Educatio al Achievement: Explanations and Implications of Recent Trends. August 1987.

The CBO review of achievement indicates that about 14% of of all students from kindergarten through eighth grade are enrolled in Chapter 1. The evaluation reports that "Title I/Chapter 1 could have contributed measurably to the relative gains of black and Hispanic students, but probably only in the early grades...In the higher grades, however, the effect of the program would have been far smaller -- perhaps even negligible -- because of the much smaller percentage of students participating in the program in those grades, the lesser impact of the program on older students, and the apparent lack of persistence of effects on younger students."

Overall, the summary review describes gains in test scores of 10% to 30% among Chapter 1 students in comparison to non-participating students, and reports the program's greater impact in mathematics than in reading, as well as a larger effect in the lower grades than in the higher grades. The report also notes that gains were not "large enough to narrow substantially the gap between program participants and other students...[and] erode after participating students leave the program."

Mizell, M.H. Testimony at hearing, Changing Economics in the South: Preparing Our Youth. Select Committee on Children, Youth, and Families. U.S. House of Representatives. Washington, D.C. April 24, 1987.

So h Carolina, under its education reform initiative, spent about $55 million in 1987 to provide compensatory and remedial education programs to approxiamtely 245,000 students who d d not meet the State's basic skill standards. The State also targeted resources to prepare four-year-olds at risk of serious learning problems when they enter school. Of the more than 12,000 vocational students available for job placement, nearly 80% were either employed in areas related to their training or had continued in higher education. The State's kindergarteners for the past two years have had the highest rate of average daily student attendance in the nation, and increasing numbers of students are scoring higher on standardized tests.

Children's Defense Fund (CDF). A Children's Defense Budget FY 1988. An Analysis of Our Nation's Investment in Children. Washington, D.C. 1987.

Summarizing results from studies of Chapter 1, CDF reports that "The Sustaining Effects Study, commissioned by the U.S. Department of Education, found that Chapter 1 students gained seven to twelve months in reading, and eleven to

twelve months in math, for every year they participated in the program -- a significantly higher gain than they would have achieved without Chapter 1's help. Data from the NAEP (National Assessment on Educational Progress) also indicate that students in Chapter 1-eligible schools scored higher in aggregate reading achievement scores than those in non-Chapter 1 schools. Moreover, by helping poor children keep up in school, Chapter 1 saves the cost of grade repetition, which is more than four times as high as that of Chapter 1 services."

The report cites that $3,700 is the average per-student expenditure for a year, and therefore the average per-student cost of repeating a grade. It also notes that research has shown that "most children who fail to master material one year gain little by repeating it a second year...[and] that holding children back means many of them will enter junior high school when they are much older than their peers -- making them significantly more likely to drop out."

Kennedy, M.M., et al. The Effectiveness of Chapter 1 Services: Second Interim Report from the National Assessment of Chapter 1. Office of Educational Research and Improvement. U.S. Department of Education. July 1986.

Evaluation of Chapter 1 showed that national math and reading rankings of Chapter 1 students increase in every grade except 12th, in which the math ranking went up while reading stayed the same.

Carter, L. A study of the sustaining effects of compensatory and elementary education: the sustaining effects study. Santa Monica, CA, System Development Corporation, January 1983.

U.S. Department of Education-supported study of elementary students in grades 1-6 found that students receiving Title I services gained more in reading in grades 1, 2 and 3 and in math in all grades than similar students who did not receive Title I help.

Mullin, S., et al. "Is more better? The effectiveness of spending on compensatory education." Phi Delta Kappan. January 1983.

Authors conclude that evidence shows that Title I/Chapter 1 projects have a positive but small effect on the achievement of disadvantaged students; and that there is no significant association between achievement gains and project costs per pupil.

U.S. Department of Education, Office of Planning, Budget, and Evaluation, Planning and Evaluation Service. An Evaluation of ESEA Title I -- Program Operations and Educational Effects. A Report to Congress, March 1982.

Cited findings described above. Also noted, based on information collected over three years, that

In reading, students who left the Title I program because of high performance did not fall back noticeably after they ceased participation in Title I.

The amount of regular instruction and tutor/independent work has positive effects on achievement.

National Assessment of Educational Progress. Has Title I improved education for disadvantaged students? Denver, Colorado. September 1981.

Title I emerged as primary factor contributing to improved reading performance of youngsters in Title I schools. Black elementary students closed gap with other elementary students by 6 percentage points; and black 13-year-olds narrowed gap with other 13 year-olds by 3.4 percentage points.

General Accounting Office. Greater Use of Exemplary Education Programs Could Improve Education for Disadvantaged Children. Report to the Congress. September 1981. HRD-81-65.

When Title I assistance was resumed to 1,195 students after they had been out of the program for at least 1 school year, their achievement rates increased significantly. The rates of achievement gain had dropped when the Title I assistance was initially terminated. The percentage of students keeping up with or gaining on their peers jumped from 6% while out of the program to 78% when assistance resumed.

National Institute of Education. Compensatory Education Study. A Final Report from the National Institute of Education. U.S. DHEW. Washington, D.C. 1978.

Study mandated by Congress under the Education Amendments of 1974 to examine purposes and effectiveness of compensatory education programs. Study investigated 6 major areas: fund allocation, service delivery, student development and program administration, parent involvement, and evaluation. Findings indicate that

Compensatory instructional services clearly emphasize the basic skills of reading and mathematics; appear to be of high quality, as measured by class size, time for instruction, teacher qualifications and use of sound instructional techniques.

Compensatory education students make and maintain significant achievement gains over a year. First graders made average gains of 12 months or 12 percentile points in reading, and 11 months or 14 percentile points in mathematics. Third graders made average gains of 7 months or 9 percentile points in reading and 12 months or 17 percentile points in math.

Substantial Parent Involvement Improves Achievement

Haynes, N.M. and Comer, J.P. "The Effects of Parental Involvement on Student Performance." Unpublished paper. 1987.

Students in grades three through five in seven New Haven schools employing a broad-based parent involvement program showed significantly greater improvement in behavior, attendance, and classroom reading grades than students in the control group.

Comer, J.P. School Power. New York: MacMillan, The Free Press. 1980.

Intensive program, including substantial parent involvement, to change the organization and governance of two New Haven elementary schools located in low income areas and beset with academic and behavioral problems resulted in significant, lasting gains in student achievement.

Gillum, R. "The Effects of Parent Involvement on Student Achievement in Three Michigan Performance Contracting Programs." Paper presented at AERA Annual Meeting. New York. 1977. Cited in Henderson, A. The Evidence Continues to Grow. Parent Involvement Improves Student Achievement. National Committee for Citizens in Education. 1987.

School districts which designed and implemented most comprehensive parent involvement programs had students who showed the greatest improvements in reading skills.

Cost Effectiveness

Children's Defense Fund. 1987. op. cit.

National Center for Educational Statistics, "1983-84 Digest of Educational Statistics" Washington, D.C.: U.S. Dept. of Education, December 1983, p. 83. Cited in Barriers to Excellence: Our Children at Risk. National Coalition of Advocates for Students. January 1985.

It costs only $500 to provide a year of compensatory education to a student berore he or she gets into academic trouble. It costs over $3000 when one such student repeats one grade once.

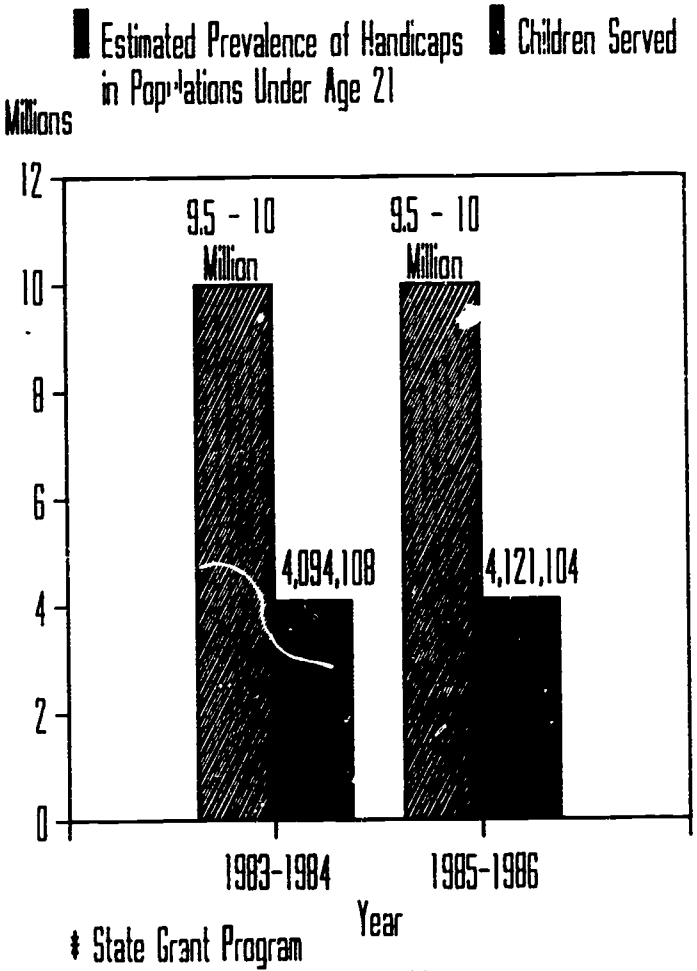
National Coalition of Advocates for Students. 1985. op. cit.

"When compensatory education prevents one student's repeating a grade, we can provide compensatory education to five other students at no cost. Since students who repeat grades are those most likely to drop out or get pregnant too early even after remaining in school for several extra years, the

real social benefit from targeted compensatory education is much greater. Early attention clearly has measurable effects in later years."

Education for All Handicapped Children

Participation* (Children Ages 3-21)



* State Grant Program

Source: Estimated Prevalence of Handicaps: Kakalik, J. et al. 1973.
Children Served: U.S. Dept. of Education, Office of Special Education and Rehabilitative Services.

P.L. 94-142, EDUCATION FOR ALL HANDICAPPED CHILDREN

The Education of tne Handicapped Act authorizes programs to support and improve the education of handicapped children. The largest and best known of these is the State grant program, authorized by P.L. 94-142, the Education for All Handicapped Children Act. The purpose of P.L. 94-142 is to assure that every handicapped child aged 3-21 years, residing in a st. e participating in the program, receives a free, appropriate educ tion in the least restrictive environment. P.L. 99-457 expanded services to children with handicapping conditions by supporting educational services for preschool children ages 3-5 and state programs for disabled and developmentally at-risk infants and toddlers ages 0-2.

P.L. 94-142 mandated and first supported evaluation studies in 1976. Until recently, evaluations focused on the progress and effects of implementing the Act. P.L. 98-199, Education of the Handicapped Act Amendments enacted in the 98th Congress, moved the emphasis in evaluation beyond implementation toward effects on students and cost effectiveness.

There is agreement that while much room for improvement remains, there has been substantial progress in special education programs and services due to P.L. 94-142. Reports point to

Increases in number of students served and in available serv[illegible]

Success by States in implementing the Act

Benefits to students who have received special education services

- Colorado Department of Education follow-up survey suggests that high school graduates who participated in special education programs in Colorado have made positive adjustments in their communities. Nearly 70 percent were working at least part-time and contributing significantly to thei- own support.
- Handicapped students who had received special education services in Connecticut reported considerable success and satisfactory adjustment in educational, employment and personal areas of their lives since leaving school.
- A study of secondary programs for mildly handicapped children in New York City and upstate New York found that four out of five students took the state competency tests and achieved a high rate of success. A majority of the city students passed in each of the three areas tested. Three-quarters of the upstate students passed in each subject area.

Effectiveness of special education services in moving handicapped students into regular classes

- Two-thirds of the students who participated in a Kentucky kindergarten program for handicapped five-year-olds have been placed in regular classrooms.
- A Delaware program that integrated special education students with regular education students found both that the handicapped students made significant academic gains and that the nonhandicapped students out performed their peers in ordinary classes.

Importance and cost effectiveness of early intervention services for handicapped infants and preschoolers in promoting healthy development and decreasing the need for special education

- If intervention for handicapped infants is delayed until age six, education costs to age 18 are estimated at $53,350. Intervention at birth is estimated to result in lower education costs of $37,272, a savings of $16,078.
- For every $1 invested in high quality preschool programming, there is a $3 reduction in public special education costs.
- School districts in Colorado have saved $1560 per pupil in special education costs because of the INREAL early intervention program.

STUDIES

Implementation, Services and Effects

U.S. Office of Special Education and Rehabilitative Services. U.S. Department of Education. Ninth Annual Report to Congress on the Implementation of The Education of the Handicapped Act. 1987.

The number of children with handicapping conditions served in the 1985-86 school year increased slightly over the previous year to a total of 4,370,244, most served under P.L. 94-142. 4,121,104 children ages 3-21 were served under the State Grant program, up approximately 27,000 from 4,098,104 in 1983-84.

An evaluation of developmental and pre-academic education services for handicapped children 3 to 5 years of age in Louisiana found accelerated gains in a wide range of measures. In a 7 to 8 month period of instruction, average gains in fine motor skills ranged from 10.4 to 10.9 months; in cognitive skills, from 10.1 to 11.6 months; in language skills, from 9.6 to 11.8 months; and in gross motor skills, 7.7 to 9.6 months.

A study of children participating in a special education program in Delaware that allows handicapped children to be educated in the regular classroom 100 percent of the time found that the handicapped students in grades K-6 experienced significant gains in reading, spelling, and math. Non-handicapped K-6 students participating in the program also achieved consistently higher scores in statewide testing programs than their peers enrolled in ordinary classes.

A program in North Carolina that provides support for regular education teachers who work with special needs children has resulted in better use of diagnostic and curricular information by teachers; a decrease in misclassification; and earlier and more appropriate referrals.

Two thirds of the students who participated in Kentucky's Individualized Kindergarten program, which serves handicapped five-year-olds, have been placed in regular classrooms. Of these, 60% did not require special assistance, while 40% received resource room assistance. Students in the program showed statistically significant improvement in the areas of fine and gross motor skills, cognition, and language when tested after completion of the program.

A Massachusetts Department of Education evaluation of the impact and effectiveness of special education programming on a statewide basis made the following positive findings:

* Special education programs are considered effective in developing basic skills in language arts, mathematics, and the encouragement of an understanding of our democratic society.

* Special education programs develop attitudes and behaviors which lead to an effective use of the environment and the development of creative expression.

* The programs are effective in providing beneficial physical education, enhancing student self-concepts, and cultivating positive values and attitudes among students.

* The programs facilitate sound educational planning and encourage a working partnership between the parents and the school.

The Massachusetts evaluation also found, however, that the special education programs were less than effective in developing the students' desire to learn.

A New York State Education Department evaluation of secondary programming for mildly handicapped students found that these students can succeed in school and earn a high school diploma when given access to regular education and equivalent special education courses. Ninety-eight percent of upstate students and 96% of New York City students who participated in regular education courses, passed at least one course. Over 90% of the upstate and New York City mildly handicapped students were successful in equivalent special education programs on the first try. Four out of five mildly handicapped students took the state competency tests and they achieved a high rate of success. On their first attempts, 92% of upstate students passed reading, 84% passed writing and 77% passed mathematics. For city students, 77% passed reading, 75% passed writing, and 54% passed mathematics.

In Wisconsin, 100% of the 1985 and 1986 graduates of a transition to employment program for moderately to severely handicapped adolescents found employment in non-sheltered work settings.

Castro, G. and Mastropieri, M.A. "The Efficacy of Early Intervention Programs: A Meta-Analysis." Exceptional Children. Vol. 52. No. 5. February 1986.

Evaluation of early intervention programs for handicapped populations indicate moderately large immediate benefits for handicapped populations. These results are evident over a variety of outcome variables including IQ, motor, language, and academic achievement. Longer, more intense programs are associated with greater efficacy.

U.S. Office of Special Education and Rehabilitative Services. U.S. Department of Education. Seventh Annual Report to Congress on the Implementation of the Education of the Handicapped Act. 1985.

Reviews of the effectiveness of preschool education for children with handicapping conditions have demonstrated educational and economic benefits. Further, the earlier the intervention, the greater is the ultimate dollar savings and the higher is the level of educational achievement.

Study of high school graduates who participated in special education programs in Colorado showed that they made positive adjustments in their communities. Nearly 70 percent were working at least part-time. "There was little evidence

of financial dependence upon such social programs as welfare. However, the study also found that these former students remain at only marginal levels in the community's social, economic, and employment activities."

Students with disabilities in one class in Connecticut, who received special education services, reported considerable success and satisfactory adjustment in educational, employment and personal areas of their lives since leaving school.

Cost Effectiveness

U.S. Department of Education. 1987. op. cit.

U.S. Department of Education. 1985. op. cit.

Garland, C., et al. (eds.). "Early intervention for children with special needs and their families: Findings and recommendations." Westar Series Paper No. 11. Seattle, WA: The University of Washington, 1981. (ERIC Document Reproduction Service No. ED207 278). Cited in U.S. Department of Education. 1985. op. cit.

"If intervention began at birth, education costs to age 18 were projected to be $37,272. If intervention was delayed until age six, the cost was projected to be $53,350."

Berrueta-Clement, et al. Changed Lives: The Effects of the Perry Preschool Program on Youths through age 19. Ypsilanti, MI: The High/Scope Press. 1984. Also cited in U.S. Department of Education. 1985. op. cit.

Cost/benefit analysis concluded that 2 years of high quality preschool for children who tested as borderline mentally retarded returns three and one-half times the initial investment.

Schweinhart, L.J., et al. Young Children Grow Up: The Effects of the Perry Preschool Program on Youths through Age 15. Ypsilanti, MI: High/Scope Educational Research Foundation. 1980.

Analysis of cost effectiveness of early intervention showed that for every $1 invested in high quality preschool programming, there is a $3 reduction in public special education costs.

McNulty, B.A., et al. "Effectiveness of Early Special Education for Handicapped Children." Report Commissioned by the Colorado General Assembly. 1983.

Colorado Research Design Study evaluated the program and cost effectiveness of INREAL early intervention and found that, even after subtracting the costs of the preschool special education program, the school districts saved $1560

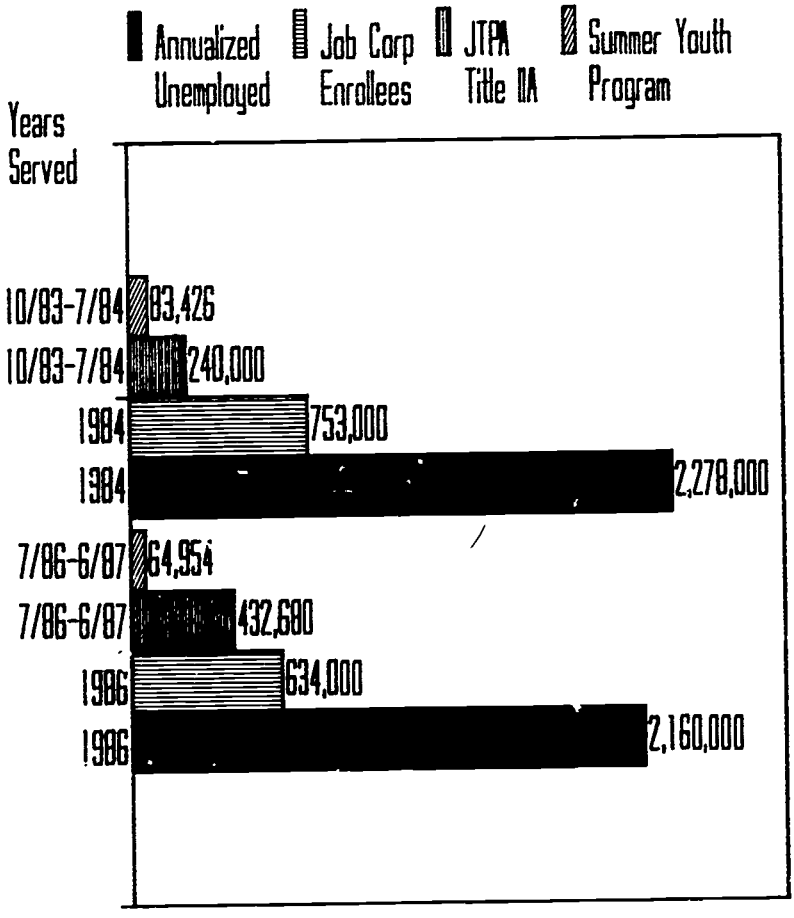
per handicapped pupil and $1050 per at-risk pupil because of the intervention.

Weiss, Rita S. "INREAL intervention for language handicapped and bilingual children." Journal of the Division for Early Childhood. 1981. 40-51.

Analysis of the cost effectiveness of the INREAL intervention in Colorado showed cost savings of nearly $1300 per child over a 3-year period.

Youth Employment and Training

Participation (Ages 16 - 21)



Source: U.S. Dept. of Labor, Employment and Training Administration.

YOUTH AND EMPLOYMENT AND TRAINING

An array of interventions and programs are included under youth employment and training. Several were started or enhanced under the large scale demonstration programs created by the Youth Employment Demonstration Projects Act of 1977 and incorporated in the Comprehensive Employment and Training Act (CETA). The major youth employment and training efforts are now permanently authorized under the Job Training Partnership Act, which went into effect in October 1983.

Evaluations of a variety of efforts show that a combination of remedial education, training and well-structured work experience can lead to improvements in employability and wages. Interventions have also been successful in helping students to remain in school and have reduced summer learning loss. Evidence points to

Employability and wage gains

- Over $650 more per year in average earnings, and over three weeks per year more of employment for Job Corps participants in the first 4 years after program participation
- Increased employment rate and earnings of program participants served in YIEPP (Youth Incentive Entitlement Pilot Projects), which guaranteed full-time summer and part-time year-round jobs for youths who were in or returned to school
- Employment and hourly earnings gains for youth who had comted CETA youth and adult-oriented programs

Prevention of school enrollment declines in YIEPP program

Other benefits

- Higher college attendance, less dependence on welfare and significant shift from more to less serious crime for Job Corps participants
- Large reductions of usual summer learning loss in reading and mathematics

Cost effectiveness

- The Job Corps investment is estimated to yield an economic return to society of 46%, or $2300 per enrollee, by increasing employment and earnings and decreasing crime and transfer payments. The program is estimated to pay back the investment in about 3 years.
- YETP program costs under CETA for FY 1982 were $4,700; participants increased their earnings by an annualized $1,810.

STUDIES

Employability and Wage Gains

Sipe, C.L., et al. "Summer Training and Education Program Report on the 1986 Experience," Public/Private Ventures, April 1987.

STEP aims to increase basic skills and lower dropout and teen pregnancy rates by providing poor and under-performing youth (14-15 years old at entry) with remediation, life skills and work experience during two consecutive and intensive summer programs, with ongoing support and personal contact during the intervening school year. Program initiated at five model sites in the Summer of 1985.

For the second cohort (summer 1986), the majority of the usual summer learning loss in reading was stemmed: at the end of the summer, STEP youth scored higher than control youth. In math, STEP youth made gains, whereas the control group lost ground. STEP youths scored eight-tenths of a grade quivalent higher than controls.

For the first cohort (summer 1985), learning losses were cut in half, so that STEP youth were a quarter of a grade equivalent ahead of the controls. During the following school year, STEP youth were 22% less likely to fail than were controls (18.7% failure rate for participants vs. 22.0% for controls).

Committee on Government Operations. U.S. House of Representatives. Job Corps Program: Its Benefits Outweigh the Costs. House Report 99-215. July 1985.

Report discusses reviews of the program (including studies by Mathematica Policy Research, Inc., the Department of Labor, and the National Research Council's Committee on Youth Employment Programs.) Report concludes that Job Corps is a "highly successful anti-poverty program,"...serving "a more disadvantaged and disenfranchised youth population than other job training programs,...with over 75% of all enrollees moving on...either to a job or to school."

"Job Corps is not only effective in serving the needs and providing quality job training for the Corps members themselves, but also provides society as a whole with a net social profit of 46¢ of every tax dollar invested in the program."

Westat, Inc. Continuous Longitudinal Manpower Survey. CLMS Follow-up Report No. 13. Postprogram Experiences, with Pre/Post Comparisons, for Terminees Who Entered CETA During FY 1980. Prepared for Office of Strategic Planning and Policy Development, Division of Performance Management and Evaluation, Employment and Training Administration, U.S. Department of Labor, December 1984.

Department of Labor-supported study of postprogram labor market experiences of individuals who were newly enrolled in C.E.T.A. programs during FY 1980 showed that youth enrollees

in all program activities made "improvements in their employment and earnings. Annualized earnings between the first quarter before entry and the first quarter after termination more than doubled. By the sixth quarter after termination, earnings more than tripled, compared to the immediate pre-program quarter."

Youth who participated in YETP (Title IV-A, CETA) increased their earnings by an annualized $1810 - 171% -- from the fourth quarter before program entry to the sixth quarter after termination. Participants in on-the-job training (OJT) doubled their earnings to $4160 in the same period.

Farkas, G., et al. Post-Program Impacts of the Youth Incentive Entitlement Pilot Projects. New York. Manpower Demonstration Research Corporation. June 1984.

YIEPP guaranteed full-time summer and part-time year-round jobs for youths when they were 16-19 years of age, upon their promise to remain in school or return to school if they had dropped out. The program resulted in increases in employment for the target population, with especially large employment effects for Black youths -- those at greatest risk for unemployment and other employment problems. "Preliminary analysis showed that, overall, the program increased the employment rate of 15-16 year old cohort by nearly 19%, for an 84.2% improvement over the comparison group. During the school year, the employment rate of the groups increased by 115% over what it would have been in the absence of the program."

Final analysis indicated that the program helped youth remain in school, "avoiding the negative effects often associated with youth employment programs without an enrollment requirement."

Program effects for Black youths include significant earning gains during the program and throughout the follow-up period.

Post-program effects were substantially larger for high school graduates than nongraduates.

It was estimated that the increase in earnings, if persistent, would be $746.52 per program participant per post-program year.

Mallar, C., et al. Project Report: Evaluation of the Economic Impact of the Job Corps Program. Prepared for Office of Policy and Research, Employment and Training Administration, U.S. Department of Labor. Mathematica Policy Research, Inc. September 1982.

In the first four years out of the Job Corps, participants on average earned over $650 (15%) more per year and were employed over three weeks more a year than nonparticipants; had higher college attendance; had reduction in serious health problems of an average of over one week per year; received less financial welfare assistance, amounting to an average of over two weeks per year; had a reduction in the

receipt of Unemployment Insurance of nearly one week per year; and show a reduction in serious crime. Results appear stable throughout the four years of post-program observation.

The program's economic benefits to society are estimated to be about $7,400 per participant (in 1977 dollars) compared to costs of $5,100, thus yielding a return to society of 46%. It is estimated that the social investment is paid back in about 3 years.

U.S. General Accounting Office. Labor Market Problems of Teenagers Result Largely From Doing Poorly in School. Washington, D.C. PAD-82-06. March 29, 1982.

GAO study examined teenage unemployment problems. GAO "reviewed several studies made by the Department of Labor and other researchers and found that the need estimates varied widely, from 379,000 to 3.7 million youths." GAO calculated that, as of 1977, those in need of employment and training services were "962,000 economically disadvantaged youths with a high school degree or lower attainment." The report concluded that school performance and attainment are important factors in youth employment.

Congressional Budget Office. Congress of the United States. Improving Youth Employment Prospects: Issues and Options. February 1982.

Summarizing analyses of employment and training programs for disadvantaged youths, CBO notes that

> Success in the work place is closely related to basic writing, communication, and computational skills.
>
> Work experience alone does not appear to improve the employability of disadvantaged youths, even when the work experience is well supervised and highly supportive.
>
> Substantial gains in employability are possible for disadvantaged youths when they are offered a combination of services, including remedial education, well-structured work experience, and training. Gains in employability appear to be related only to the time spent in education and training activities, although work experience can be useful as a motivation to continue [e.g., as done in Youth Incentive Pilot Project (YIEPP)]." (The estimated cost per service year of providing a part-time job during the school year and a full-time job during the summer months was $4,900 for 1982; YETP-CETA Title IV-A service year costs were $4,700.)

Study also comments on the effectiveness of Job Corps, stating that, while it is the most expensive of the youth employment programs (costing about $14,000 per full-time, full-year training slot and proportionately less per participant), its benefits have been shown to exceed its costs.

School Retention

Manpower Demonstration Research Corporation. 1984. op. cit.

Other Benefits

Sipe, C.L., et al, 1987. op. cit.

Mallar, C., et al, 1982. op. cit.

Cost Effectiveness

Westat, Inc. 1985. op. cit.

Mallar, C. et al. 1982. op. cit.

Congressional Budget Office. 1982. op. cit.

APPENDIX

Program Participation Sources

Special Supplemental Food Program for Women, Infants, and Children (WIC)

Food and Nutrition Service. U.S. Department of Agriculture

Prenatal Care

U.S. Department of Health and Human Services. National Center for Health Statistics. Advance Report of Final Natality Statistics. 1985. Monthly Vital Statistics. Vol. 36. No. 4. Supplement July 1987.

U.S. Department of Health and Human Services. National Center for Health Statistics. Unpublished data based on Advanced Report of Final Natality Statistics, 1982. Monthly Vital Statistics. Vol. 33. No. 6. September 1984.

Medicaid

U.S. Department of Health and Human Services. Health Care Financing Administration.

Number of Related Children under Age 21 Below the Poverty Line: Computed by the Congressional Research Service, based on Current Population Survey of the U.S. Bureau of the Census..

Childhood Immunization

U.S. Department of Commerce, Bureau of the Census. Statistical Abstract of the United States. 1985, Table 181; and 1987, Table 162.

Preschool Education

U.S. Department of Commerce. Bureau of the Census. Statistical Abstract of the United States: 1987, Table 194; 1985, Table 212.

Reece, C. "Head Start at 20." Children Today. V. 14. No. 2. March-April 1985.

Compensatory Education

U.S. Department of Education. Office of Educational Research and Improvement. National Assessment of Chapter 1.

Children's Defense Fund. A Children's Defense Budget. 1987.

Children's Defense Fund. An Interim Report on the Implementation of Chapter 1. Washington, D.C. 1984.

Education For All Handicapped Children

U.S. Department of Education. Office of Special Education and Rehabilitative Services. Ninth Annual Report to Congress on the Implementation of the Education of the Handicapped Act. 1987.

U.S. Department of Education. Office of Special Education and Rehabilitative Services. Seventh Annual Report to Congress on the Implementation of the Education of the Handicapped Act. 1985.

Kakalik, J., et al. Services for Handicapped Youth: A Program Overview. Santa Monica, California: Rand Corporation. 1973.

Youth Employment and Training

Employment and Training Administration. U.S. Department of Labor.

U.S. Department of Labor. Bureau of Labor Statistics.