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ABSTRACT

The reports document achievements of early intervention programs (EIPs) for handicapped infants and young children in Massachusetts. The first report focuses on Project Access V and on evaluation of four major evaluation outcomes: (1) statutory compliance and generic impact of P.L. 89-313 expenditures; (2) overall P.L. 89-313 grant management and coordination; (3) population study and modal data collection procedures within EIPs; and (4) the automated information management system related to P.L. 89-313 fiscal, personnel, and impact data. Findings are summarized and recommendations offered for the P.L. 89-313 process and for EIPs in general. The second report presents similar evaluation data for fiscal year 85. Both reports cite programs' fidelity between contractual obligations and actual expenditures as well as substantial efficiency and equitability in the contract approval and management process. (CL)

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SUMMATIVE EVALUATION REPORT

PROJECT ACCESS V

AN INVESTIGATION OF THE IMPACT OF P.L. 89-313 FUNDS ON EARLY INTERVENTION PROGRAMS

DEPARTMENT OF PUBLIC HEALTH
COMMONWEALTH OF MASSACHUSETTS

PREPARED BY

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SEPTEMBER 1, 1984

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I. INTRODUCTION

Interest and commitment to handicapped infants and toddlers have markedly increased within recent years. While this concern is attributable, in part, to legislative mandate (P.L. 94-142), numerous studies have identified both immediate as well as persevering benefits which are associated with Early Intervention (EI) programs. In fact, positive outcomes of these efficacy investigations have become so widespread that the prevailing, contemporary perspective is not, "should early intervention services be provided?" but rather, "to whom should they be directed?"

This favorable view of EI programs has resulted in a 14 percent increase in the number of young handicapped children served nationally within the past four years (U.S. Department of Education, 1983). In Massachusetts, the observed increases have been even more dramatic. More precisely, while the reported number of special needs children from birth to three totaled 398 in 1978, the corresponding sum for 1983 was 2,474, or in excess of a 600 percent increase in the number of children served.

In January, 1983, the Department of Public Health (DPH) assumed principal administrative and financial responsibility of the majority (i.e., 44 of 53 programs) of EIPs throughout the state and as such, also became responsible for managing and monitoring P.L. 89-313 funds allocated to these programs. Consistent with the obligation to conduct an independent evaluation of 89-313 supported services, DPH conducted an open, competitive search for an evaluator in the Fall, 1983.

The principal evaluator of these programs, Thomas T. Kochanek, Ph.D., was selected on December 16, 1983. Since that time, evaluation objectives and methodology as well as data collection instruments and procedures have been developed and approved.

The evaluation strategy has been designed to investigate the degree of congruence between Early Intervention Program contracts and actual operations, to determine the generic impact of 89-313 expenditures on children and their families, to examine the overall management of P.L. 89-313 funds, and to conduct an EI population study for the period 1979-1984 in order to examine evolutionary changes in prevalence and primary diagnoses which have occurred and on this basis, to generate resulting programmatic and financial implications for the immediate future. For each of these major goals, a series of more specific evaluation questions/issues has been developed.

The purpose of this summative evaluation report is to present these evaluation questions and the data collected relative to each and to describe the manner and extent to which receipt of 89-313 funds has enriched the services available for young special needs children and their families.

II. OVERVIEW OF PROJECT ACCESS V

A. Major Objectives

The major objectives of Project Access V are as follows:

1. To facilitate developmental progress of EIP children within the areas of expressive and receptive language, cognition, social behavior, and fine and gross motor skills.
2. To expand and enhance the diagnostic capability of EIPs such that multi/transdisciplinary evaluations may be completed in a timely and thorough manner.
3. To actively involve parents within the educational planning and implementation process.
4. To provide ongoing parent support, education, therapy, and/or advocacy consistent with the observed needs within families as a whole.

Given the significant differences (i.e., type of children served, staffing patterns, services available, philosophical orientation, etc.) which exist among EIPs, certainly all programs have not committed resources to all four objectives; rather, based upon an internal review of their own capability, programs have appropriately used 89-313 funds to address one or more of these goals. The evaluation process will determine those objectives addressed, examine associated implementation strategies, and from a generic point of view, assess the impact of these procedures on participating children.

B. Population Served

Children eligible for P.L. 89-313 supported services include those who:

1. Are chronologically between birth and three years of age.
2. Participate in a state operated or state supported program.
3. Receive services from DPH with no LEA involvement and have a completed Individualized Education Program (IEP).
4. Are judged to be within one of the following categories (Tjossem, 1976):

Established Risk - those whose early appearing aberrant development is related to diagnosed medical disorders of known etiology bearing relatively well known expectancies for developmental outcome (e.g., Down Syndrome).

Environmental Risk - applies to biologically sound infants for whom early life experiences including maternal and family care, health care, opportunities for expression of adaptive behaviors, and patterns of physical and social stimulation are sufficiently limiting to the extent that, without corrective intervention, they impart high probability for delayed development.

Biological Risk - infants presenting a history of prenatal, perinatal, neonatal, and early development events suggestive of biological insults to the developing central nervous system and which, either singly or collectively, increase the probability of later appearing aberrant development.

Table 1 presents the number of programs and children by DPH Health Service Area who met these criteria as of October 1, 1982.

TABLE 1

Distribution of 89-313 Eligible Children

by DPH Health Service Area as of

October 1, 1982

DPH Health Service Area	No. of EIPs Within Area	No. of 89-313 Eligible Children
I	8	419
II	5	216
III	3	132
IV	17	670
V	6	229
VI	5	162
TOTAL	44	1828

C. Distribution of Programs by DPH Health Service Area

The Department of Public Health has six, clearly demarcated Health Service Areas (HSA) within the state; as such, all evaluation data have been tabulated and presented consistent with these regions. Early intervention programs resident within these areas are as follows.

HSA I	Chicopee
	Great Barrington
	North Adams
	Northampton
	Pittsfield
	Springfield (Early Childhood Team)
	Springfield (Valley Infant)
	West Springfield
HSA II	Fitchburg
	Gardner
	Hopedale
	Southbridge
	Worcester
HSA III	Andover
	Tewskbury
	West Newbury
	Ashland
	Boston (Fuller)
	Boston (Lindemann)
	Brighton

	Cambridge
HSA IV	Concord
	Dorchester (Bay Cove)
	Dorchester (Mental Health Center)
	Foxborough
	Marlboro
	Newton
	Norwood
	Quincy
	Roslindale
	Waltham
	Weymouth
	Winchester

	Brockton
	Fall River
	Hanson
HSA V	Hyannis
	New Bedford
	Taunton

	Lynn
	Malden
HSA VI	Salem (Cape Ann)
	Salem (Danvers/Salem)
	Stoneham

III. EVALUATION DESIGN

A. Objectives

The principal objectives of this evaluation effort are as follows.

1. To determine the degree of program compliance with P.L. 89-313 regulations and guidelines.
2. To determine the degree of congruence between approved EIP contracts and program operations.
3. To determine the impact of P.L. 89-313 personnel via the utilization of operationally defined, child and family centered outcome and impact categories.
4. To examine the overall management and coordination of P.L. 89-313 funds.
5. To conduct an EI population study for the period 1979-1984 with an emphasis upon prevalence, primary and secondary diagnoses, and a comparative analysis among identified special needs populations across three age strata: 0-3, 3-5, and 5-8 years.
6. To identify the range and frequency of various assessment procedures (i.e., child and family focused) currently used within EIPs for purposes of treatment planning as well as determination of service impact.
7. To design and create an automated, information management system related to P.L. 89-313 fiscal, personnel, and impact data.

Consistent with these objectives, what follows are a series of implementation activities which have been completed in order to ensure actualization of stated objectives.

B. Implementation Activities

Objective No. 1 Statutory Compliance and Generic Impact of P.L. 89-313 Expenditures

1.1 To determine the degree of program compliance with P.L. 89-313 regulations and guidelines.

1.2 To determine the degree of congruence between approved EIP contracts and program operations.

1.3 To determine the impact of P.L. 89-313 personnel via the utilization of operationally defined, child and family centered outcome and impact categories.

The three objectives noted above are primarily intended to assess not only the degree of fidelity between statutes, contracts, and program operations, but also to identify areas of amplified diagnostic and/or service capability within EIPs as a direct consequence of receiving 89-313 funds. To this end, all programs have completed a standardized questionnaire (i.e., Early Intervention Program Questionnaire) which includes a distribution of all program staff by Full Time Equivalent (FTE) and funding source, role and function of 89-313 personnel, and accomplishments of these personnel across a range of diagnostic and direct care responsibilities.

In addition, each site (N = 44) has been visited by a member of the evaluation team and has included an administrator interview, confirmation of the accuracy and validity of questionnaire data, identification of discrepancies between approved contracts and actual expenditures, and examination of client records (e.g., diagnostic protocols, IEPs) to validate reported 89-313 outcomes.

Objective No. 2 Overall P.L. 89-313 Grant Management and Coordination

The principal issue to be examined within this component of the evaluation involves the promptness with which 89-313 funds are made available to programs (i.e., after September 1, 1983) and furthermore, the degree to which EIPs translated monies into direct services for children and their families. As such, the evaluators have conducted a serial review of the elapsed time from the initial date of the grant period (i.e., 9/1/83) to the date of contract approval as well as to the time at which 89-313 supported services were actually initiated. Again, this analysis has been completed for all programs and is aggregated by Health Service Area and the state in its entirety.

Objective No. 3 Population Study and Modal Data Collection Procedures Within Early Intervention Programs

3.1 To conduct an EI population study for the period 1979-84 with an emphasis on prevalence, primary and secondary diagnoses, and a comparative analysis among identified special needs populations across three age strata: 0-3, 3-5, and 5-8 years.

3.2 To identify the range and frequency of various assessment procedures (i.e., child and family focused) currently used within EIPs for purposes of treatment planning as well as determination of service impact.

The Division of Family Health Services, Department of Public Health, has recently been awarded a two year grant from the Massachusetts Developmental Disabilities Council; in brief, the major objective of this award is to conceptualize and implement an automated, client record system for all Early Intervention Programs throughout the Commonwealth. While the initial operational year of this project has been devoted to the creation of descriptive data sets (i.e., client characteristics, services provided), it is anticipated by the evaluators that subsequent years will entail the inclusion of more specific performance data within either select or all programs such that longitudinal, in-depth evaluation questions may be addressed.

In order to assist in the development of this information management system, the evaluators, within the context of each site visitation, have randomly selected seven children per program and recorded and categorized both the range and frequency of occurrence of various norm and criterion referenced assessment procedures. In this manner, an accurate portrayal of modal, contemporary data collection procedures has emerged and as such, should assist in determining the technical adequacy of currently available data sets within the overall context of longitudinal efficacy investigations. Furthermore, policy implications regarding the systematic collection of performance data within EI programs should also result from these data.

It is also significant to note that as programs shift into a service unit system of monitoring and reimbursement for FY 85, the Department has developed the data processing capability to follow EI clients and their families over time and to portray all services, accompanied by their respective costs, provided to these children. As these service units and longitudinal tracking abilities are supplemented by indices of

child and family level of functioning, the Department will possess the data requisite to numerous cost benefit analysis questions. As such, a review of existing instrumentation is highly compatible with current and projected priorities.

Finally, the prevailing consensus clearly indicates that EI services have undergone unparalleled revision and expansion within the past five years. Despite the precipitous increase in the population served, scant data exists with regard to precisely describing both the quantitative and qualitative change which has occurred in children served within this time period. These data are not only important to understanding the nature and origin of observed or presumed change, but more importantly provide a sound foundation for a prospective vision of the forthcoming two to three years. Accordingly, the evaluators have assembled and collated data from multiple sources relative to descriptive characteristics of the EI population. These data include:

1. Number of live births by year; 1973-1983.
2. Number of Early Intervention Program children served by year; 1979-1983.
3. Number of children judged as special needs during the preschool period (i.e., 3-5 years) by year; 1979-1983.
4. Number of children judged as special needs within the primary grades (i.e., 5-8 years) by year; 1979-1983.
5. Total number of preschool children by year; 1979-1983.
6. Total number of school age children within primary grades by year; 1979-1983.

In addition, within the context of each site visitation, seven children have been randomly selected from the current program roster (i.e.,

birth years = 1981 - 1983) as well as a similar number served in 1979 (i.e., birth years = 1975 - 1979). Descriptive data (i.e., Child Information Inventory; Family Information Inventory) which have been recorded include: date of birth, date of program entry, primary and secondary diagnostic classification (i.e., Biological, Environmental, Established), specific primary and secondary presenting problems (e.g., name of organic, metabolic, chromosomal, neurological disorder; developmental anomalies; presence and extensiveness of risk medical factors; problematic familial/environmental issues; etc.), and the nature and frequency of data collected to describe both child and family level of functioning.

Overall, these data have resulted in both numerical as well as graphic displays of changes in the population which have occurred within the last five years as well as a prospective vision of the EI population within the next twenty-four months. Representative questions/issues which have been addressed with these data are as follows.

1. What changes have occurred in the prevalence rates of identified special needs children within EI programs in the last five years?
2. What is the relationship between these changes and primary and secondary diagnostic classifications (i.e., Biological, Environmental, Established)?
3. What is the relationship between these changes and observed presenting problems in children and their families?
4. Are traditional diagnostic classification schemes (BIO, ENV, EST) sufficiently sensitive and discrete to describe these changes or do they serve to obscure these changes?

5. What is the relationship between the number of special needs children served from 0-3 and 3-5 years? From 0-3 and 5-8 years?
6. Do these data provide insight into what might constitute an appropriate and acceptable base prevalence rate for the birth to three population?
7. Do these data suggest underrepresentation or overrepresentation of specific diagnostic classifications within EI programs? If significant disparities exist in prevalence rates across the three age ranges, what are the implications for existing child surveillance procedures?
8. Given the changes which have occurred in the EI population within the last five years, what are the short term as well as longitudinal implications for programs? What are the implications for LEA supported programs for special needs children from 3-5?

Examination of these questions should assist in understanding recent EI evolution and also in providing a reasonable basis upon which to view the future, and therefore assist in prospective planning.

Objective No. 4 Automated Information Management System Related to P.L. 89-313 Fiscal, Personnel, and Impact Data

Historically, while the independent evaluation of Early Intervention Programs has entailed multiple data sets, all statistical analyses have been completed via interactive terminals linked to an IBM 4341 mainframe which included current statistical packages (e.g., SPSS; SAS). A significant limitation of this procedure, though the results are unques-

tionably accurate, is that no data is permanently stored on magnetic tape or diskette, and as a result, the data receives limited use, particularly by State Department personnel.

In order to make all evaluation data more accessible and useful to DPH staff and also to facilitate the handling and storage of information, the evaluators have created a permanent file structure (i.e., microcomputer diskette) which generally includes the following information.

	File Component	Potential Applications
1.0	Program Identification	
1.1	Program, name, address, phone	1. Mailing and program lists by geographic region, health service area, and state
1.2	Administrator name	
1.3	Program code, DPH area, Health Service Area	2. Program code enables data merge with other DPH information management systems
2.0	P.L. 89-313 Child Count and Fiscal Data	
2.1	89-313 child count as of October 1 for the period 1979-1984	1. Serial comparisons of children served within and across programs over time
2.2	89-313 dollar allocation for FY 81-84	2. Serial comparisons of dependence upon 89-313 monies within and across programs
2.3	89-313 budget for FY 84	
2.4	Total program budget for FY 84	3. Maintenance of data base on prevalence of EI population over time

File Component		Potential Applications
3.0	EI Program Personnel	
3.1	Distribution of all EI personnel by FY, FTE, academic discipline, and funding source	1. Baseline data base against which comparisons may be generated regarding supplanting issues 2. Examine EI staffing patterns by geographic region, health service area, and state 3. Examine the financial and programmatic impact of staffing patterns included within proposed EI standards
4.0	P.L. 89-313 Outcome Data	
4.1	Number of children served and/or evaluated as a result of 89-313 funds by fiscal year	1. Serial comparisons of impact of 89-313 funds within and across programs 2. Baseline data base against which service units provided in FY 85 may be compared 3. Comparison between 89-313 service units and state supported service units

These data files have been constructed such that: (1) new variables may be added to existing file structures at any point in time; (2) data files may be updated on an annual basis while continuing to

store historical data; (3) data files may be expediently merged with information management systems resident at DPH; (4) data files have extensive sorting capability and also provision for statistical manipulation of data entered. Most importantly, these files should provide a useful vehicle for DPH Early Intervention staff in successfully interacting with the data processing capability within the Department.

C. Evaluation Team

Participants in the completion of this evaluation effort were as follows.

Thomas T. Kochanek, Ph.D.
Principal Investigator
Professor of Special Education
Rhode Island College
and
Adjunct Associate Professor of Child Development
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Marie Gallant, M.Ed.
Evaluation Associate

Sally Radford, M.Ed.
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Sharon O'Neil, M.Ed.
Research Assistant

Winston Ajce
Computer Programmer

IV. EVALUATION OUTCOMES

A. Statutory Compliance and Generic Impact of P.L. 89-313 Expenditures

The primary data set which addresses the issue of program compliance with the original 89-313 proposal involves staff role and function. That is, examination of the extent to which funds were expended on activities directly related to grant objectives is of focal importance here. Three relevant sources of data exist in this regard: (1) percent of the 89-313 contract which is devoted to personnel related expenses; (2) personnel (by academic discipline and Full Time Equivalent (FTE)) directly supported by these funds; and (3) the respective responsibilities assumed by these employees. Table 2 presents findings with regard to the line item distribution of 89-313 funds by Health Service Area.

TABLE 2

P.L. 89-313 Line Item Budget Allocation

by DPH Health Service Area

	Health Service Area						
Item	I	II	III	IV	V	VI	TOTAL
Personnel	$231,258.	$144,294.	$74,449.	$390,611.	$109,989.	$114,063.	$1,064,664.
Training	2,040.	4,814.	5,892.	3,223.	4,661.	988.	21,618.
Contracted Service	28,290.	4,201.	5,280.	28,570.	24,812.	5,483.	96,636.
Management	8,330.	---	3,603.	550.	3,380.	---	15,863.
Occupancy	12,500.	1,096.	---	8,552.	4,045.	---	26,193.
Transportation	9,884.	749.	2,740.	7,414.	3,615.	1,938.	26,340.
Supplies	3,618.	366.	3,076.	3,629.	4,720.	200.	15,609.
Equipment	635.	---	---	---	270.	---	905.
Indirect Costs	5,125.	---	---	2,966.	1,820.	448.	10,359.
Other	---	---	---	30.	1,088.	---	1,118.
TOTAL	$301,680.	$155,520.	$95,040.	$445,545.	$158,400.	$123,120.	$1,279,305.

Data in Table 2 indicate that upon examination of all approved contracts, approximately 91 percent of the funds (i.e., Personnel and Contracted Service) were expended on professional and para-professional staff. In light of the fact that the major objectives of Project Access V are child and family focused, this is indeed a positive finding. Furthermore, due to the fact that the evaluation has examined the functions as well as accomplishments of all these personnel, the evaluators feel relatively confident that the 89-313 allocation has been monitored and accounted for at a level nearly equal to its maximum.

It is also important to note that although the reported allocation to Training activities was $21,618. or 1.7 percent of the total budget, this amount was substantially reduced due to the policy of restricting expenditures to 89-313 individuals only and furthermore, consistent with the proportion of salary which is 89-313 related. As a result, the line item allocation to personnel, in fact, exceeds 91 percent; more importantly, given the potential of these training experiences to significantly enhance professional development and overall program capability, re-examination of this regulation should occur and subsequent policy revisions should be distributed to programs prior to final contract decisions for FY 85.

Table 3 presents the distribution of personnel supported with 89-313 funds throughout the 1983-1984 operational year.

TABLE 3

Number of Professionals Supported With

89-313 Funds By Academic Discipline

	Academic Discipline										
HSA	Admin.	Aide	Educa-tor	Nurse	Occup. Ther.	Physi-cian	Phys. Ther.	Psych.	Sec-retary	Soc. Wrk.	Sp/Lang. Ther.
I	.55*	1.15	2.5	2.0	.68	---	1.15	---	.54	1.50	2.46
II	.40	.50	---	---	1.28	---	.45	.55	1.16	1.91	1.04
III	.28	---	.70	.83	.49	---	.75	.15	.75	.18	---
IV	.98	3.35	2.61	1.87	.23	---	2.47	.4	.63	3.29	3.24
V	---	.59	---	.50	1.40	---	.60	---	---	.93	2.20
VI	---	---	1.60	---	1.97	---	1.12	---	---	.20	.61
STATE	2.21	5.59	7.41	5.20	6.05	---	6.54	1.10	3.08	8.01	9.55

*Full Time Equivalent

Data in Table 3 indicate that a total of 54.74 FTEs were purchased with 89-313 funds; of these, the greatest number were speech and language therapists, social workers, educators, and physical and occupational therapists. Least frequent were psychologists and administrators. These data are viewed as remarkably consistent with the stated objectives of this Project and provide additional confirmation of the congruence between the source P.L. 89-313 proposal and actual program operations.

It is also important to note that this FTE total is compatible with the Personnel line item allocation previously presented in Table 2. That is, of the $929,040. (i.e., $1,161,300. less 20 percent for fringe benefits and payroll taxes) expended on direct salaries, 55 FTEs, or approximately $16,900./individual, were ourchased; this appears consistent with existing median salary levels for EI personnel and accordingly, a strong relationship is evident between approved contracts and actual employment data reported by program administrators.

With regard to the role and function assumed by these various individuals, EI administrators were requested to indicate the distribution of professional time of each 89-313 employee across a range of responsibilities which were derived from the objectives of the initial proposal. Table 4 presents the results of these responses by HSA and state as a whole.

TABLE 4

Distribution of 89-313 Staff Time

by Function

HSA	Direct Child Service	Child Evaluation	Parent Educ./ Supp./Therapy	Case Consult.	In-Service Education	Maintenance of Records	Travel, Phone, Staff Mtgs.
I	39.54*	9.57	10.65	7.71	2.67	13.22	16.64
II	33.17	16.43	11.79	12.61	6.08	9.58	10.34
III	21.47	19.00	14.00	10.93	3.33	18.20	13.07
IV	33.56	10.94	9.98	13.04	4.15	14.21	14.12
V	40.72	13.22	10.63	8.17	2.46	13.22	11.58
VI	41.67	12.50	8.97	6.75	5.59	13.02	11.50
STATE	35.02	13.61	11.00	9.87	4.05	13.58	12.88

*Percentage of professional time devoted to this function

Data in Table 4 clearly indicate that in terms of the major purposes of the 89-313 grant award (i.e., to facilitate overall child development, conduct diagnostic evaluations, support and engage parents in programming efforts), approximately 60 percent of the professional time purchased with 89-313 monies were directly devoted to these functions. Approximately 15 percent of available staff time was devoted to activities (i.e., consultation and training) which influence the level of competency and sophistication of these service providers. These data are viewed as strongly supportive of a high degree of concordance between actual 89-313 expenditures and grant objectives. More importantly, these findings also imply that funds have been used to strengthen the overall program capability of programs through securing new personnel and that only marginal segments of these budgets are used to purchase materials and hardware or to support other operating expenses.

Finally, with regard to the extent to which EIPs are dependent upon 89-313 monies, Table 5 presents information which suggests that 89-313 accounts for approximately 15 percent of a program's operating expenses. It is interesting to note that this represents a reduction from previous years (e.g., 1982 = 21.58 percent; 1983 = 19.42 percent) and is presumably attributable to the substantial increase in state funding which has been observed this year.

TABLE 5

Ratio of P.L. 89-313 to Total Program Funds by DPH Health Service Area

HSA	No. of Programs	P.L. 89-313 Allocation	Total Budget	Percent
I	8	$ 301,680.	$1,741,750.	17.32%
II	5	$ 155,520.	$1,233,915.	12.60%
III	3	$ 95,040.	$ 666,089.	14.27%
IV	16	$ 445,545.	$3,099,905.	14.37%
V	6	$ 158,400.	$1,159,549.	13.66%
VI	5	$ 123,120.	$ 877,884.	14.02%
TOTAL	43	$1,279,305.	$8,779,092.	14.57%

Range = 7.89 - 37.33%

In summary, evaluation data examined relative to the relationship between the original 89-313 proposal and actual expenditures reveals substantial consistency across all areas examined. Simply stated, Early Intervention Programs in nearly all instances hired staff commensurate with not only the major objectives of the grant itself but also consistent with regulatory policies inherent within P.L. 89-313 legislation. This is indeed a commendable finding.

In order to determine the impact of 89-313 funds, six generic outcomes were identified which were perceived as most likely to be affected by the infusion of 89-313 funds. These outcomes included:

Additional Children Served	Number of children who entered the program subsequent to the initial date of employment of this individual. For staff previously supported with P.L. 89-313 funds, the initial date of employment should be reported as 9/1/83.
Existing Children Served	Number of children who received increased/amplified service by this individual, yet entered the program prior to the initial date of employment.
Additional Children Evaluated	Number of children evaluated (for program entry) subsequent to the initial date of employment of this individual.

Existing Children Re-Evaluated	Number of children re-evaluated who were receiving services prior to the initial date of employment of this individual.
Families Receiving New or Additional Services	Number of families receiving services from this individual subsequent to initial date of employment.
Children With IEP Objectives	Number of children for whom IEP objectives are directly related to this individual.

Each program administrator was requested to produce a child count associated with each of these outcomes. The evaluator, within the context of the site visitation, then requested written substantiation (e.g., diagnostic reports, IEPs, etc.) for all children claimed within the various outcome categories. In many instances, where significant numbers of children were involved in varying degrees in programs, the administrator simply permitted the evaluator to examine all child folders for purposes of verification of administrator counts. As a result of this document review, 1,835 records were examined by the evaluators. Of these, 1,508 contained completed IEPs. Table 6 presents the distribution of these data by HSA.

TABLE 6

Number of Child Records Examined

With IEPs Present by DPH

Health Service Area

HSA	Folders Examined	IEPs Present
I	313	255
II	198	172
III	204	155
IV	620	538
V	281	217
VI	219	171
TOTAL	1835	1508 (82.18%)
1983 (N = 29 EIPs)	731	666 (91.11%)
1982 (N = 29 EIPs)	888	738 (83.11%)
1981 (N = 28 EIPs)	664	534 (80.42%)

Of significance in Table 6 is the fact that while 82 percent of the folders examined in 1984 contained completed IEPs, comparable findings for previous years were as follows: 1983 = 91 percent; 1982 = 83 percent; 1981 = 80 percent. While records examined with incomplete and/or missing IEPs appear to pose a compliance problem, in fact, this discrepancy is substantially reduced due to the following factors: (1) waiting lists (i.e., for program entry) have become more commonplace throughout the State and as a result, many folders included referrals which had not yet been processed and others in which parents refused assessment and/or service; (2) four programs were evaluated for the first time and therefore, were somewhat unfamiliar with evaluation expectations; and (3) programs in general are serving an increased number of neonates, and many multi/transdisciplinary teams do not attempt to develop an IEP until the child is at least three months of age. Overall, in the evaluator's judgement, substantial compliance is evident with the stipulation that all 89-313 eligible children possess complete IEPs.

Table 7 presents data by HSA relative to increased numbers of children served as a result of 89-313 funds.

TABLE 7

Additional Children Served by

89-313 Personnel

HSA	Reported by Administrator	Confirmed by Evaluator	
I	119	84	
II	74	57	
III	46	34	
IV	267	144	
V	116	107	
VI	68	51	
TOTAL	690	477	(69.13%)
1983 (N = 29 EIPs)	368	298	(80.98%)
1982 (N = 29 EIPs)	498	306	(61.45%)
1981 (N = 28 EIPs)	171	158	(92.40%)

Evident in Table 7 is the fact that of 690 additional children claimed to have been served by receipt of 89-313 funds, the evaluators discovered documentation for 477 (69 percent). Examination of historical data (1983 = 81 percent; 1982 = 62 percent) indicate fewer cases in 1984 for whom appropriate documentation was available as compared to previous years, although it is important to note that the number of confirmed cases per program has remained almost constant (1984: $\frac{477 \text{ cases}}{43 \text{ programs}} = 11.09$; 1983: $\frac{298 \text{ cases}}{29 \text{ programs}} = 10.28$). Again, given the fact that four new programs are reflected in the FY 84 data, the evaluators view these data as grossly equivalent. Data with regard to the number of existing children served by 89-313 personnel are presented in Table 8.

TABLE 8

Existing Children Served by

89-313 Personnel

HSA	Reported by Administrator	Confirmed by Evaluator
I	185	160
II	182	159
III	57	47
IV	522	353
V	153	148
VI	138	129
TOTAL	1237	996 (80.52%)

Historical data identical to this outcome category not previously collected.

Data in Table 8 relative to the number of existing children who received additional services by 89-313 personnel indicate that appropriate documentation was available in 81 percent of the cases reported by administrators. Though similar outcome data for previous years was not recorded, this level of documentation is consistent with all other outcome categories presented and thus, is not viewed as problematic.

Table 9 presents information relative to the additional number of children evaluated with 89-313 funds.

TABLE 9

Additional Children Evaluated by

89-313 Personnel

HSA	Reported by Administrator	Confirmed by Evaluator	
I	194	155	
II	106	89	
III	53	35	
IV	197	122	
V	86	80	
VI	77	47	
TOTAL	713	528	(74.05%)
1983 (N = 29 EIPs)	418	331	(79.19%)
1982 (N = 29 EIPs)	683	416	(60.91%)
1981 (N = 29 EIPs)	290	184	(63.45%)

Data in Table 9 reflect similarities between 1983 and 1984 with regard to written substantiation (e.g., diagnostic reports, test protocols) for children evaluated for EIP entry. In fact, while 11.14 children (331 youngsters in 29 programs) were evaluated per program with 89-313 funds in 1983, the resulting figure for FY 84 was 12.28 (528 children in 43 programs). Comparable findings are presented in Table 10 which portrays the number of children in EIPs who were re-evaluated as a direct result of 89-313 monies.

TABLE 10

Existing Children Re-Evaluated

by 89-313 Personnel

HSA		Reported by Administrator	Confirmed by Evaluator	
I		189	167	
II		124	114	
III		104	84	
IV		238	167	
V		75	70	
VI		137	96	
	TOTAL	867	698	(80.51%)
	1983 (N = 29 EIPs)	322	263	(81.68%)
	1982 (N = 29 EIPs)	634	418	(65.93%)
	1981 (N = 28 EIPs)	229	148	(64.63%)

While the available documentation for children re-evaluated is nearly equal for 1983 and 1984, a significant increase is observed in the number of children evaluated per program. That is, examination of 1983 results indicate approximately 9 children re-assessed within each EIP while the number of youngsters evaluated in FY 84 exceeded 16. This is an important finding not only for purposes of 89-313 evaluation, but more significantly that baseline levels of child functioning are now routinely completed and as a consequence, functions such as IEP formulation, progress reporting to parents, and examining child growth over time as a function of EI participation are greatly facilitated.

Table 11 presents the number of families who have received new and/or enhanced services by 89-313 personnel.

TABLE 11

Number of Families Served by

89-313 Personnel

HSA	Reported by Administrator	Confirmed by Evaluator	
I	237	155	
II	196	157	
III	111	79	
IV	412	358	
V	162	142	
VI	181	174	
TOTAL	1299	1065	(81.39%)
1983 (N = 29 EIPs)	547	483	(88.30%)
1982 (N = 29 EIPs)	828	395	(47.71%)

Data presented in Table 11 reflect that the dramatic increase in available documentation related to familial intervention reported between 1982 and 1983 has remained relatively steady within the past 12 months. In most instances, this is attributable to family centered services being included within the IEP itself, and also to a range of separate and distinct monitoring procedures wherein the e services were recorded. In light of the central and integral role which these services assume within the identity and purpose of EIPs, the stability of these changes is particularly noteworthy.

The final outcome category associated with the expenditure of 89-313 funds related to the number of children who were directly affected (i.e:, IEP goals and specific objectives) by these personnel. Findings related to this outcome are presented in Table 12.

TABLE 12

Number of Children With IEP Objectives

Directly Related to 89-313 Personnel

HSA		Reported by Administrator	Confirmed by Evaluator	
I		267	212	
II		222	206	
III		62	32	
IV		523	385	
V		212	184	
VI		191	166	
	TOTAL	1477	1185	(80.23%)
	1983 (N = 29 EIPs)	685	624	(91.09%)
	1982 (N = 29 EIPs)	830	631	(76.02%)
	1981 (N = 28 EIPs)	528	384	(72.73%)

Information presented in Table 12 indicate that services provided by 89-313 staff as reflected in the IEP were clearly apparent in eight out of every ten IEPs examined. While it is significant to note that this represents a 10 percent reduction in available documentation when compared to 1983, it is also important to note that the actual number of children served per program increased from 21.52 (1983) to 27.56 (1984). Despite this greater number of children served however, the decrease in documented IEPs should not be obscured and constitutes an issue which needs to be addressed within ongoing site visitations performed by DPH Central and Regional officals.

In summary, as the evaluators have attempted to determine the quantifiable outcome of 89-313 funds on Early Intervention Programs, it is apparent that these monies have had a definite impact on the direct service and diagnostic capability of programs with approved contracts. EIPs can, in fact, point to 528 additional children evaluated for program entry; 698 existing children re-evaluated, 1,185 IEPs having been directly affected; and 1,065 families having received increased services by 89-313 supported personnel. It must be remembered that these data reflect the minimum impact of 89-313 monies since all site visitations occurred between February and June, 1984 and in most instances, 3 - 4 months of the grant period remained.

It should also be noted that all 1984 outcome data has become a distinct file within the automated information management system previously described, and has been made available to DPH area representatives. Consequently, these data can be used to identify

individual programs which evidence significant departures from both HSA and State results and thus, will not only provide focus to the technical assistance and support which is offered by these individuals but also improve 89-313 monitoring efforts.

B. Overall P.L. 89-313 Grant Management and Coordination

Perhaps the major source of data regarding the overall management of P.L. 89-313 funds relates to the amount of elapsed time from the initial date of the grant period (September 1, 1983), to the date of AF-7 approval (time at which money is earmarked for a specific program and the effective date after which services are reimburseable), to the contract approval date (time at which vouchers may be submitted for payment), and finally to the date at which 89-313 supported services actually begin. Table 13 presents these respective time lapses for EIPs by HSA and State as a whole.

TABLE 13

Elapsed Time Between Beginning of Grant Period, AF-7 Approval, Contract Approval, and Initiation of 89-313 Services

HSA	No. of Days for AF-7 Approval	No. of Days for Contract Approval	No. of Days for Initiation of Service
I	0	36.25	0
II	0	38.00	0
III	0	38.67	0
IV	0	43.38	0
V	0	52.50	0
VI	0	37.80	0
STATE	0	41.72	0
1983	0	14.74	3.49
1982	1.88	30.46	33.77
1981	46.84	139.52	104.16

Clearly evident in Table 13 is the fact that the impressive reductions in time delays which have been observed over the last three years have been maintained by the Department of Public Health. More specifically, all AF-7 approvals were issued commensurate with the beginning of the grant period and furthermore, 89-313 services continued without interruption from FY 83 to FY 84. While this continuity is attributable, in part, to a substantial carry-over of 89-313 personnel across fiscal years, nevertheless, this finding is particularly noteworthy given the significant increase in volume, both in dollars as well as number of contracts, which the Department has had to contend with this year.

Overall, these data as well as information presented earlier regarding the apparent congruence between the 89-313 proposal, line item expenditures, personnel hired, and staff role and function indicate a sound and efficient management process. P.L. 89-313 services have been initiated on the initial day of the FY 84 grant period; given the magnitude of funds involved and the extensive number of vendors and programs, this is an extraordinarily positive result.

C. Population Study and Modal Data Collection Procedures within Early Intervention Programs

As previously indicated, beyond the fundamental compliance functions of this evaluation, a second major objective involved a retrospective analysis of the EI population, particularly with regard to prevalence and primary diagnosis, such that a clearer perspective would be realized regarding not only historical but more importantly

projected needs of this population. Furthermore, it was also determined that a comparative analysis of diagnosed special needs children within various age clusters would yield an objective, quantifiable basis for a prospective view of the forthcoming years with regard to the need for, if any, Early Intervention Program expansion. As such, data was solicited from the Departments of Education, Mental Health and Public Health regarding not only the number of diagnosed handicapped children but also the total number of youngsters residing in the Commonwealth by birth year.

Data assembled for these analyses included the following.

1. Population Information Requested: Number of special needs children from birth to three

   Data Available: P.L. 89-313 child counts from October 1, 1979 to 1983

   Strengths and Liabilities of Data: While these data, in all likelihood, underestimate the total number of EI infants and toddlers served on an annual basis, it is nevertheless the only consistent metric maintained over time across all programs throughout the Commonwealth. Moreover, since information common to all programs (and collected at the same point in time) does not exist regarding referrals who ultimately did not

receive services, families which refused EI involvement, and cumulative child counts, EI prevalence rates reported will underestimate the actual number of children served though the extent of this error is indeterminable.

2. Population Information Requested: Number of special needs children from three to nine by chronological age

Data Available: Special Needs Census Data submitted by school districts to the Department of Education on October 1

Strengths and Liabilities of Data: Again, while the range of error is unknown regarding the extent to which a singular rather than cumulative child count misrepresents the actual number of special needs children served (though the error is presumably lower here due to the minimum number of school age children exited from special education programs per year), these data are equivalent to child counts described above and therefore, whatever underestimation exists, it will at least be held constant across all ages from birth to nine.

Given these two data sets, resulting prevalence rates of diagnosed special needs children from birth to five for the period 1979-1983 were calculated. Data for the 0-3 cohort is presented in Table 14.

TABLE 14

Prevalence of Special Needs Children

From Birth to Three For The Period

1979 - 1983

Year	No. of EI Programs	No. of Special Needs Children	No. of Live Births	Prevalence
1983	53	2474*	225,429** (81-83)	1.10%
1982	53	2135	222,270 (80-82)	.96%
1981	52	1859	217,088 (79-81)	.86%
1980	52	1755	211,684 (78-80)	.83%
1979	40	1102	206,930 (77-79)	.53%

*Massachusetts Departments of Public Health and Mental Health

**Massachusetts Department of Public Health Birth Register

Prevalence data presented in Table 14 clearly demonstrate that within the past four years, the EI population has doubled (i.e., .53 percent to 1.10 percent) when the number of live births is used as a comparative index. Data with regard to children 3-5 years of age is presented in Table 15.

TABLE 15

Prevalence of Special Needs Children

From Three to Five Years of Age

For the Period 1979 - 1983

Year	No. of Special Needs Children	No. of Live Births	Prevalence
1983	6596*	211,684** (78-80)	3.12%
1982	6551	206,930 (77-79)	3.17%
1981	6058	202,310 (76-78)	2.99%
1980	6252	201,854 (75-77)	3.10%
1979	5727	204,088 (74-76)	2.81%

*Massachusetts Department of Education Census

**Massachusetts Department of Public Health Birth Register

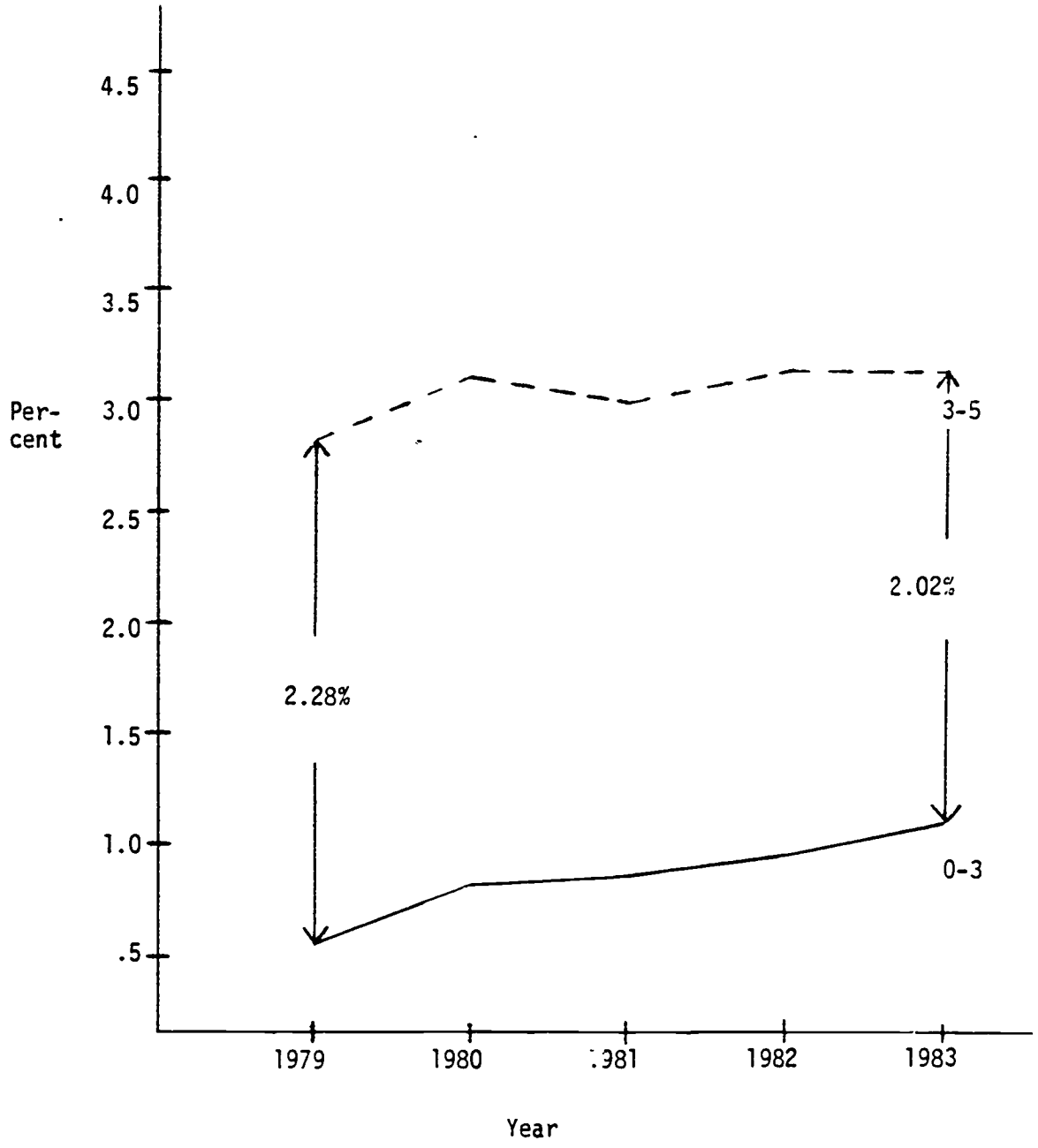
While data in Table 15 reflect only a marginal increase within the last four years in the prevalence of preschool special needs children served within public schools, it is significant to note that there are approximately three times the number of children judged as handicapped from 3-5 as compared to birth to three. More importantly, despite the precipitous increase observed in the EI population within the last four years, the gap between identified special needs populations from 0-3 and 3-5 has remained almost constant. The comparative paths of these prevalence rates over time are portrayed in Figure 1.

FIGURE 1

Prevalence of Special Needs Children

From Birth to Three vs. Three to Five:

1979 - 1983



While this persistent gap between the two age clusters is somewhat surprising in light of the fact that the EI population has been predominantly comprised (i.e., 80-85 percent) of ESTABLISHED and BIOLOGICAL groups, the data on the prevalence of special needs within school age children, presented in Table 16, is even more alarming.

TABLE 16

Prevalence of Special Needs Children From

Five to Nine Years of Age For

The Period 1979 - 1983

Year		Chronological Age (Grade Placement) 5 (kdg.) N	%	6 (One) N	%	7 (Two) N	%	8 (Three) N	%	9 (Four) N	%
1983	sp.nds.	3478*	6.03	6619	10.7	8654	15.30	10218	18.04	10652	18.34
	tot.enr.	57718		61638		56578		56644		58068	
1982	sp.nds.	3432	5.98	6147	10.23	8757	15.33	10110	17.41	10573	17.67
	tot.enr.	57404		60075		57115		58079		59824	
1981	sp.nds.	3321	5.84	6267	10.36	8746	14.81	10123	16.76	11019	16.93
	tot.enr.	56908		60490		59038		60383		65097	
1980	sp.nds.	3662	5.95	6468	10.22	9213	14.89	11213	16.98	12765	17.49
	tot.enr.	61535		63287		61878		66020		73001	
1979	sp.nds.	3398	5.36	6615	10.12	9741	14.61	12378	16.83	12851	16.51
	tot.enr.	63362		65383		66667		73554		77829	

*Massachusetts Department of Education Census

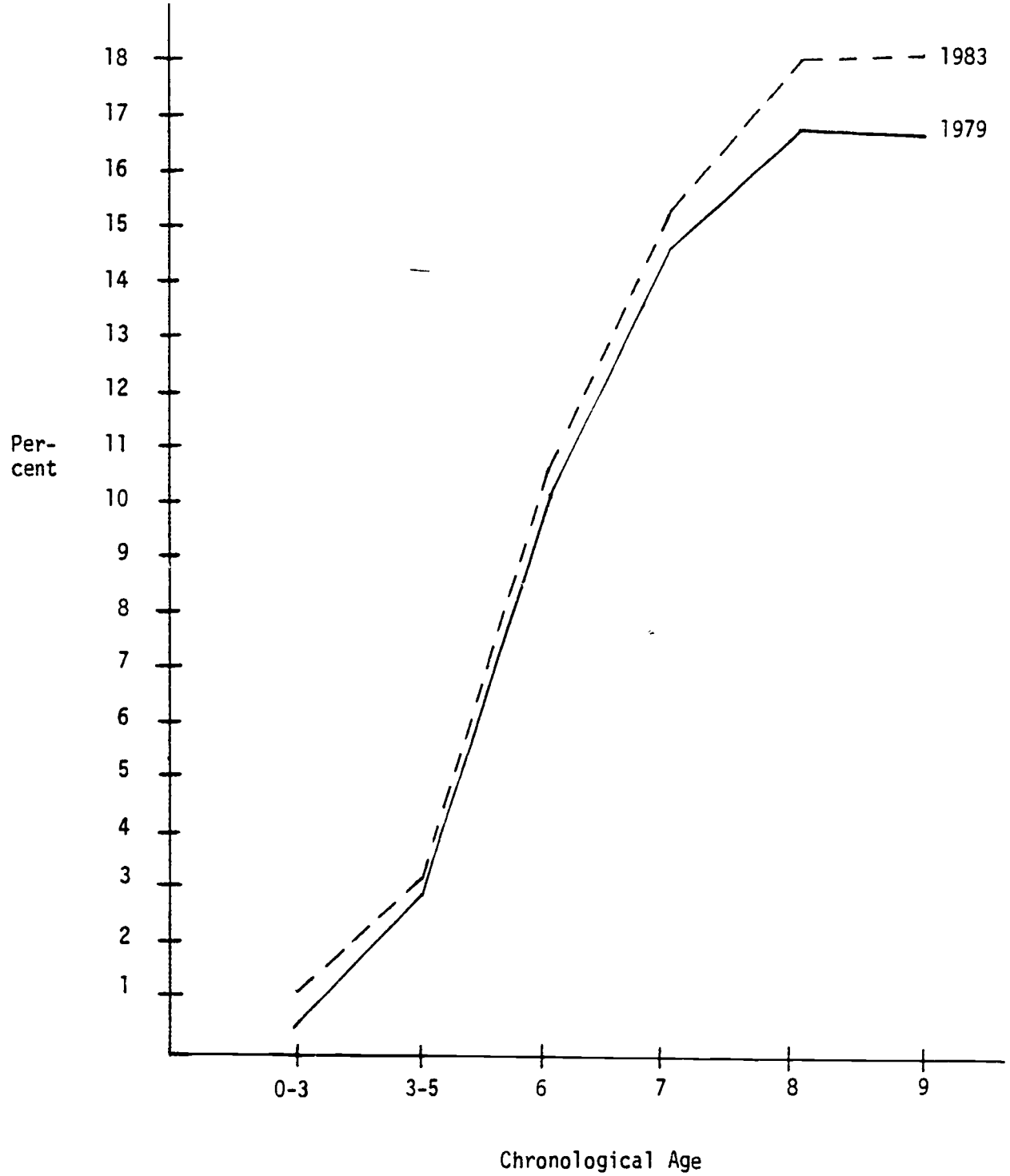
Prevalence data in Table 16 indicate a dramatic rise in the number of special needs children from Kindergarten through Grade 4. More specifically, in Grade 1, census data reveal ten times as many children judged as handicapped when compared to the birth to three year period; by the Fourth Grade, the multiplier has spiraled to 18. Of equal if not greater significance is that only one-sixth of those children perceived as special needs in Grade 4 were identified during the preschool period (i.e., 3-5 years of age). This is particularly noteworthy in light of the fact that child find screening programs have been in effect for nearly a decade, yet these procedures apparently fail to detect the majority of those youngsters later placed within special education programs. Furthermore, these disparities do not appear to be isolated incidents since these patterns, portrayed in Figure 2, have remained relatively constant over the past four years.

FIGURE 2

Prevalence of Special Needs Children

From Birth to Nine Years of Age;

1979 vs. 1983



In order to insure the reliability of these findings, 1980 census data were also used as a denominator to calculate prevalence rates of handicapping conditions from birth to nine. These results are presented in Table 17.

TABLE 17

Prevalence of Special Needs Children

From Birth to Nine Years of Age

According to 1980 Census Data

Age	No. of Special Needs Children	Total No. of Children	Prevalence
< 5 years	4345*	337215**	1.29%
5 years	3662	71730	5.10%
6 years	6468	67185	9.63%
7 - 9 years	33191	239212	13.88%

*Massachusetts Department of Education Census

**1980 Census Report

Prevalence data presented in Table 17 clearly replicate the findings presented earlier; that is, substantial discrepancies in identification are observed between preschool and elementary level special needs populations and in fact, less than 10 percent of those children judged as handicapped between seven and nine years of age are identified during the birth to five year period. Alternative hypotheses which account for this difference include: (1) that the content and predictive validity of existing diagnostic instrumentation, particularly with children from birth to three, is weak and inaccurate; (2) that the developmental course of most young children is characterized by irregularity and discontinuity which preclude accurate early identification; (3) that the relationship is, at best, obscure between skills measured with tests for young children and curricular expectations in primary grades; (4) that the curriculum and instructional methodologies used in kindergarten and Grade One need to be critically re-examined in light of the extraordinary number of children who cannot, or do not, comply successfully with these demands and as a consequence, are placed within special education programs.

Clearly, each of these areas constitute a major avenue of research inquiry and needs to be addressed if this persistent problem is to be resolved. Nevertheless, prevalence data appear to unequivocally indicate that the majority of children who manifest special needs within the primary grades are not detected during the birth to five year period. It is also critical to note that while approximately one-half of the school age handicapped population perhaps demonstrate mild learning inefficiencies, reading disabilities, and speech and language impairments which may be undetectable in early years, the

remainder of this population encounter serious difficulty with school and present significant learning and behavioral problems by age nine. If early intervention, conceptually, is to be both preventative as well as ameliorative in nature, then there appears to be little or no question that programs need to re-examine and analyze eligibility criteria and furthermore, that this critical review must be coordinated with similar undertakings by school districts for their preschool surveillance procedures. If it is acknowledged that those children with moderate to severe learning and behavioral problems in school (i.e., estimated at 6-8 percent) should be identified during the preschool period, then the data seem to suggest that the early intervention population could double, and perhaps even triple, in number with sound justification for doing so.

Further insight into this underenrollment problem is also derived from a more precise examination of changes which have occurred within recent years in the composition (i.e., diagnostic classification) of the EI population. As previously indicated, the evaluation methodology this year has included, within the context of each site visitation, a random selection of seven children served within 1979 as well as 1984. For each case selected, assignment to BIOLOGICAL, ENVIRONMENTAL, or ESTABLISHED classification groups was made and furthermore, specific clinical diagnoses and/or manifestations were recorded via examination of EI multi/transdisciplinary team diagnostic summaries, hospital charts, medical reports, and data submitted by individuals and/or agencies external to the program. All classifications were confirmed during an exit interview with administrators

or diagnostic personnel in order to verify the reliability of evaluator judgements.

It is critical to note that the group classifications of BIO, ENV, and EST were used not only because they represent convention in all programs, but also due to the fact that these descriptors are also used within existing standards governing EI programs. It should be noted however, that their use for evaluative and/or research purposes is severely restricted due to the following: (1) the membership within classifications is extremely heterogeneous; for instance, the EST group includes those with severe metabolic and neural tube defects as well as children who manifest expressive language delays of unknown etiology; (2) there is no universal, consistent interpretation of membership within classifications across all EI programs; (3) group assignments are not mutually exclusive and, in fact, have a tendency to be interactive at any given point in time (e.g., BIO-ENV; ENV-EST); (4) classifications are subject to change over time and in fact, one may serve as a precursor to another (e.g., BIO $\longrightarrow$ EST; ENV $\longrightarrow$ EST; BIO $\longrightarrow$ ENV).

Given these limitations and therefore precautions which must be used in interpreting these data, Table 18 presents diagnostic classification information for 1979 and 1984.

TABLE 18

Distribution of EI Study Children

by Diagnostic Classification;

1979 vs. 1984

	Diagnostic Classification					
	BIO		ENV		EST	
HSA	79	84	79	84	79	84
I	10(19%)	11(19%)	9(17%)	15(26%)	34(64%)	31(54%)
II	7(15%)	8(21%)	2(12%)	2(12%)	26(73%)	25(67%)
III	4(29%)	7(37%)	3(21%)	1(5%)	7(50%)	11(58%)
IV	15(15%)	39(36%)	23(23%)	23(21%)	64(63%)	47(43%)
V	5(18%)	11(26%)	1(4%)	4(10%)	22(79%)	27(64%)
VI	7(30%)	15(42%)	0	3(8%)	16(70%)	18(50%)
TOTAL	48(18.82%)	91(30.54%)	38(14.90%)	48(16.11%)	169(66.27%)	159(53.36%)

Data in Table 18 appear to indicate that the substantial increase previously noted in the EI population within the last five years is attributable to children classified as BIOLOGICAL. As indicated earlier, the number of children who could, and perhaps should have been placed into two groups concurrently (e.g., BIO and ENV) is indeterminable from these data, and in addition, the percentage of BIO which will evolve into EST is also unknown. Nevertheless, the data reveal a 62 percent increase in the percentage of children classified as BIO from 1979 to 1984. While it is widely assumed that this increase is accounted for by an increase in the number of premature births, data in Table 19 provide evidence to the contrary.

TABLE 19

Prevalence of Low Birth Weight Infants

For the Period 1974 - 1982

Year	Total No. of Live Births	≤1500 g. N	≤1500 g. %	1501 - 2500 g. N	1501 - 2500 g. %
1982	75,749*	834*	1.1%	3613*	4.8%
1981	73,930	742	1.0%	3686	5.0%
1980	72,591	731	1.0%	3682	5.1%
1979	70,567	714	1.0%	3577	5.1%
1978	68,526	690	1.0%	3728	5.4%
1977	67,837	701	1.0%	3693	5.4%
1976	65,947	660	1.0%	3718	5.6%
1975	68,070	747	1.1%	3904	5.7%
1974	70,071	694	.99%	3962	5.7%

*Massachusetts Department of Public Health Birth Register

Data relative to the prevalence of low birth weight (LBW) infants for the period 1974-1982 are presented in Table 19 and indicate that while the percentage of neonates $\leq$ 1500 g. has remained almost constant for the past eight years, the number of infants between 1501-2500 g. has actually decreased. Data in Table 20 with regard to infant mortality however, shows remarkable changes in the last five years.

TABLE 20

Prevalence of Infant Mortality
Among Low Birth Weight
Infants in Massachusetts

	Birth Weight	
Year	≤ 1500 g.	1501-2500 g.
1981	372.0*	15.2
1980	440.5	19.5
1979	481.8	24.6
1978	449.3	22.3
1977	495.0	25.7

*Rate per 1,000 live births

Data in Table 20 indicate marked reduction in infant mortality for the period 1977-1981. More specifically, while a 25 percent decrease is observed in mortality for infants $\leq$ 1500 g., a reduction of 41 percent is noted for children between 1501-2500 g. These data are extremely consistent with reported survival rates of low birth weight infants nationally (Philip, A.S. et al., 1981), and moreover, suggest that "the impressive decline in neonatal mortality has been primarily due to improved birth weight-specific survival and not to a decline in race-specific incidence of low birth weight" (Lee, K.S. et al., 1980; p. 371). It is also important to note that the decline in neonatal mortality has been larger for whites than among blacks between 1962 and 1978, and that the slower decline perhaps reflects a poorer birth weight distribution for blacks (Khoury, M.J. et al., 1984).

Philip, A.S. et al. Neonatal Mortality Risk for the Eighties: The Importance of Birth Weight/Gestational Age Groups. Pediatrics, 68, 1981, 122-130.

Lee, K.S., Paneth, N., Gartner, L.M. Neonatal Mortality: An Analysis of the Recent Improvement in the United States. American Journal of Public Health, 70, 1980, 15-21.

Khoury, M.J., Erickson, J.D., Adams, M.J. Trends in Postneonatal Mortality in the United States. Journal of the American Medical Association, 252, 1984, 367-372.

Also of noteworthy significance is the fact that recent investigations completed in Massachusetts have reported increases in neonatal mortality within select geographic areas, though the relationship of these findings to overall trends in the state as well as nationally are unknown due to the unavailability of current data. Although speculation indicates that these increases are more a function of a reduction in Federally sponsored medical and nutritional programs than they are of limitations in neonatal medicine, the degree and scope of these changes clearly need to be monitored.

Overall, however it appears solidly established that the 100 percent increase in the EI population observed within the past four years is, to a great extent, attributable to children judged as BIOLOGICAL, and more precisely to two predominant factors: (1) reduced neonatal mortality, and (2) prompt referral to EI programs by hospitals and pediatricians. Given that this increase in the BIO cohort of the EI population will continue to prevail, and perhaps even increase, then it would appear reasonable to presume that entrance into EIPs will occur earlier, and as such, programs will be making long term commitments to children and their families. Additionally, in light of the fact that services to children less than 12-18 months of age are typically home based, it would appear that the relative cost of serving children in the future will increase (i.e., in terms of units of service as well as longevity of commitment), and furthermore, if overall funding remains constant, waiting lists may become an acute problem due to significantly less turnover in the population served.

It is also critical to note that the impact of a greater representation of children judged as BIOLOGICAL on the disparities in

prevalence rates previously discussed is unknown. That is, whether the identification of these youngsters will eventuate in a reduction in the distance between diagnosed preschool and elementary level special needs populations constitutes a matter of future inquiry.

Beyond examination of changes which have occurred in the EI population within the past five years as a function of diagnostic classification (i.e., BIO, ENV, and EST), changes in the population may also be examined by the composition of individuals within classifications. As such, for each child randomly selected for study, case records were reviewed and exact clinical diagnoses and/or manifestations were recorded. Typically, 2-5 factors (e.g., birth defect syndromes, prenatal and neonatal stress factors, infant status, developmental anomalies, deleterious environmental factors, etc.) were tallied for each subject. Consequently, each child was assigned to one, primary diagnostic classification (BIO, ENV, or EST) and additionally, factors which substantiated this judgement were recorded. Data with regard to the distribution of clinical presentations of children judged as BIO are presented in Table 21.

TABLE 21

Distribution of Clinical Presentations of Children

Classified as BIOLOGICAL: 1979 vs. 1984

Factor	1979 (N=48); Birth Years=75-79	1984 (N=91) Birth Years=81-83
Gestational age	$\underline{N}$ = 20 $\bar{x}$ = 31.05 wks. SD = 2.96 wks.	$\underline{N}$ = 53 $\bar{x}$ = 31.00 wks. SD = 5.57 wks.
	N(%)	N(%)
Anemia	----	3 (3.3%)
Apgar ($\leq$ 5)	----	3 (3.3%)
Apnea	6 (12.5%)	13 (14.3%)
Birth asphyxia	1 (2.1%)	8 (8.8%)
Breech presentation	1 (2.1%)	6 (6.6%)
Cardiac disorder	5 (10.4%)	6 (6.6%)
C-Section	1 (2.1%)	15 (16.5%)
Extended hospitalization	3 (6.3%)	4 (4.4%)
Failure to thrive.	3 (6.3%)	2 (2.2%)
Hydantoin	1 (2.1%)	1 (1.1%)
Hyaline membrane dis.	3 (6.3%)	7 (7.7%)
Hypercalcemia/glycemia	----	1 (1.1%)
Hypo/pertonia	8 (16.7%)	10 (11.0%)
Hyperbilirubinemia	4 (8.3%)	9 (9.9%)
Intraventricular hemorrhage	1 (2.1%)	6 (6.6%)
Metabolic acidosis	----	3 (3.3%)
Meconium staining	2 (4.2%)	6 (6.6%)
Neurological abnormalities	13 (27.1%)	23 (25.3%)
Neonatal Intensive Care	2 (4.2%)	4 (4.4%)
Physical defect	5 (10.4%)	10 (11.0%)
Placenta previa/abruptio	3 (6.3%)	2 (2.2%)
RDS	1 (2.1%)	18 (19.8%)
RLF	----	7 (7.7%)
Seizure disorder	2 (4.2%)	19 (20.9%)
Sensory defect	5 (10.4%)	3 (3.3%)
Small for gestational age	3 (6.3%)	6 (6.6%)

Data in Table 21 first of all indicate that children served in 1979 evidenced birth years of 1975-1979, while those who were receiving services in 1984 were born in 1981, 1982, or 1983. Visual scanning of both groups appears to indicate much more similarity than difference across all factors reported; in fact, mean gestational age was nearly identical (i.e., 31.05 wks. vs. 31.00 wks.). Factors which demonstrate significant variation (i.e., increased frequency) over the five year period include Caesarean section, respiratory distress, seizure disorders, and retrolental fibroplasia. In addition, five factors appeared in 1984 records (i.e., anemia, Apgar .5, hypercalcemia/glycemia, metabolic acidosis, RLF) which were not present in cases reviewed in 1979.

It is important to note that greater differences between samples may have been observed if additional factors (i.e., 6-8 rather than 2-5) had been recorded for each subject. Despite this limitation, these data clearly signify the multi-problem status of BIO infants and solidly confirm the need for Early Intervention programming. Data with regard to the range of clinical presentations for children judged as ENV are presented in Table 22.

TABLE 22

Distribution of Clinical Presentations of Children

Classified as ENVIRONMENTAL: 1979 vs. 1984

Factor	1979 (N=38) Birth Years=75-79 N(%)	1984 (N=48) Birth Years=81-83 N(%)
Abuse/neglect	13 (34.2%)	8 (16.7%)
Adolescent parent	4 (10.5%)	3 (6.3%)
Alcoholism	----	4 (8.3%)
Child management problem	7 (18.4%)	4 (8.3%)
Child removed; in foster home	6 (15.8%)	7 (14.6%)
Child removed; with relative	1 (2.6%)	4 (8.3%)
Developmentally disabled parents	2 (5.3%)	10 (20.8%)
Disturbed maternal/infant interaction	2 (5.3%)	3 (6.3%)
Drug addiction	----	1 (2.1%)
Emotionally disturbed parents	7 (18.4%)	11 (22.9%)
Family interaction problems	2 (5.3%)	3 (6.3%)
Limited parenting skills	9 (23.7%)	17 (35.4%)
Marital problems	----	4 (8.3%)
Parents require emotional support	3 (7.9%)	6 (12.5%)
Single parent	5 (13.2%)	3 (6.3%)
Social isolation	1 (2.6%)	3 (6.3%)

Of noteworthy interest in Table 22 is a significant reduction in the number of cases within which abuse and/or neglect and child management problems were observed. While these findings are extremely disturbing particularly in light of the current, heightened sensitivity to abusive and neglectful environments, two observations are worthy of consideration: (1) that these families have established linkages with other community based programs, and thus Early Intervention is no longer viewed as a primary service mechanism for abusive curcumstances; or (2) the increase noted in parents with limited nurturing skills as well as those perceived as emotionally disturbed perhaps argue that referral sources are viewing EI as a preventative force in this regard. Both hypotheses require and necessitate further investigation due to the potential significance of this finding.

Also of importance in Table 22 is the observed increase in families with developmentally disabled parents, substance abuse and addiction, and general marital difficulties. Again, data with regard to children judged as ENV are similar to those classified as BIO in that each child/family manifests multiple needs concurrently and furthermore, this constellation of needs usually involves more than one diagnostic classification as its underpinning.

Data with regard to the distribution of presentation observed in the EST group are presented in Table 23.

TABLE 23

Distribution of Clinical Presentations of Children

Classified as ESTABLISHED: 1979 vs. 1984

Factor	1979 (N=169) Birth Years=75-79 N(%)	1984 (N=159) Birth Years=81-83 N(%)
Anemia	----	1 (.6%)
Birth defect syndromes	11 (6.5%)	11 (6.9%)
Cardiac defect	4 (2.4%)	5 (3.1%)
Cerebral palsy	26 (15.38%)	22 (13.8%)
Cleft palate	5 (3.0%)	6 (3.8%)
Developmental delay; language	19 (11.2%)	21 (13.2%)
Developmental delay; motor	10 (5.9%)	3 (1.9%)
Developmental delay; unmanageable social behavior	11 (6.5%)	5 (3.1%)
Developmental delay; global with related BIO or ENV factors	23 (13.6%)	20 (12.6%)
Developmental delay; global, unknown etiology	29 (17.2%)	29 (18.2%)
Down syndrome	33 (19.5%)	26 (16.4%)
Encephalitis	1 (.6%)	1 (.6%)
Fetal alcohol syndrome	1 (.6%)	1 (.6%)
Failure to thrive	----	3 (1.9%)
Hypo/pertonia	6 (3.6%)	3 (1.9%)
Multiple congenital anomalies	7 (4.1%)	7 (4.4%)
Neural tube defect	10 (5.9%)	7 (4.4%)
Neurological disorder	17 (10.1%)	30 (18.9%)
Seizure disorder	17 (10.1%)	17 (10.7%)
Sensory deficiency	9 (5.3%)	18 (11.3%)
Severe behavioral problem; autism	2 (1.2%)	----

Data in Table 23 regarding children classified as EST reflect a remarkable degree of congruity between 1979 and 1984. These findings are similar to trends reported nationally which signify little or no change in the incidence of chronic childhood diseases such as spina bifida, leukemia, muscular dystrophy, and cleft palate (Gortmaker, S.L., in press). Also of importance in Table 23 is the fact that most children present multiple anomalies and furthermore, that despite the decrease previously noted (i.e., 66 percent to 53 percent) in the proportion of EST children served, it appears reasonable to assume that many of the youngsters currently classified as BIO will move into the LST cohort over time and as a result, it would appear that Early Intervention Programs will be serving predominantly BIO and EST classifications within the forthcoming two to three years.

In summary, a review of randomly selected EI children served in 1979 and 1984 reveal the following observations and trends.

1. The number of children served by Early Intervention Programs throughout the Commonwealth has doubled within the last five years. Moreover, the greatest contributor to this observed gain is reflected by a 62 percent increase in children assigned to a BIOLOGICAL diagnostic classification. These changes appear to be attributable to reduced infant mortality as well as to an increase in the presence, visibility, and expressed confidence in EI programs generally.

Gortmaker, S.L. Chronic Childhood Diseases: Demographic Considerations for Public Policy in Hobbs & Perin (eds.) Chronic lly Ill Children: The Constant Shadow. San Francisco: Jossey-Bass, in press.

2. Despite the significant increases in the EI population, prevalence data with regard to diagnosed special needs children from birth to nine suggest significant disparities between 0-3, 3-5, and 5-9 chronological age clusters; in fact, data indicate persistent underidentification of children from infancy through age 5 who enter special education programs subsequent to school entry.

3. Due to the significant differences noted between the prevalence of handicapping conditions in children from birth to 5 versus 5-9, the creation of an automated, client record system recently instituted by the Department of Public Health is of immense, potential value in monitoring growth trajectories of children over time and as such, identifying the course and outcome of children with various clinical presentations served by EIPs. In this regard, while 63 different factors have been reported herein for children placed within BIO, ENV, or EST groups, it is indeed possible that differences among youngsters may have been masked due to either an inadequate range of factors or to a lack of specificity of variables recorded. In short, if this prospective data base is to be of maximum value, it would appear that maintaining specific child and family traits over time is critical to not only conducting ongoing epidemiological studies, but also in attempting to articulate those situations and circumstances which are most accurately predictive of the 18 percent of the school age population judged as handicapped.

4. On the basis of data collected over the past five years as well as overall trends in neonatology and pediatric medicine, it would appear that the EI population will be dominated by children placed within BIO and EST categories. Furthermore, the evidence also suggests that children will be enrolled within programs for longer periods of time and as a consequence, the cumulative cost per child within EI is likely to increase. In addition, due to the anticipated younger age at program entry, and therefore lower exit rate per year, waiting lists may become a serious problem within the immediate future assuming a relatively constant fiscal appropriation to programs in general.

5. While it is anticipated that a substantial proportion of school age, special needs children will be identified within the BIO and EST diagnostic classification groups, and thereby reduce the disparities in prevalence rates previously noted, considerable evidence exists in the literature that environmental, social, and economic factors are significant correlates of school failure. If indeed early intervention is preventative as well as ameliorative, and if EI possesses the capability to reduce or eliminate the need for special education subsequent to school entry, then the composition of the ENV group must be re-examined. While the specific needs of these children and their families may necessitate the creation of new service delivery models, and may eventuate in cooperative service agreements between EI programs, other social service agencies, and day care environments, the existing Early Intervention network possesses unparalleled

diagnostic and programming expertise for 0-3 populations and as such, should assume a dominant leadership position on behalf of this population.

Finally, as indicated earlier, the evaluators also attempted to record information regarding the nature, type and frequency of assessment information maintained by programs on child and family status. In this regard, for the 14 children randomly selected within each program (i.e., seven served in 1979 and the remainder served in 1984), data recorded included date of birth, date of program entry, type of assessment administered (norm referenced, criterion referenced, program developed), and the dates of serial assessments over time. Table 24 presents the results of this comparative analysis with regard to age at program entry.

TABLE 24

Mean Child Age in Months at Program Entry by DPH Health Service Area; 1979 vs. 1984

	Chronological Age							
	N		$\bar{X}$		SD		Range	
HSA	79	84	79	84	79	84	79	84
I	54	56	18.72	13.27	10.29	8.92	35	34
II	35	35	17.09	12.20	11.57	9.34	35	29
III	14	20	14.36	10.50	8.28	7.32	27	23
IV	104	112	16.06	9.19	8.63	7.65	35	30
V	28	41	16.79	10.37	8.02	7.46	32	32
VI	23	35	11.96	14.26	8.99	8.83	32	30
TOTAL	258	299	15.83	11.63	9.30	8.25	35	34

Evident in Table 24 is the fact that a 27 percent reduction (i.e., 15.83 months to 11.63 months) is evident in the mean chronological age at which children begin to receive EI services. These data are substantially consistent with data reported earlier regarding the increase in the BIO cohort, and provide additional credence to statements with respect to a prolonged commitment by programs to children and their families in the future.

Data with regard to the elapsed time between program entry and the initial, formal child assessment is presented in Table 25.

TABLE 25

Mean Elapsed Time From Date of
Entry to Date of Initial Child Evaluation;
1979 vs. 1984

	No. of Children		Elapsed Time in Days					
			$\bar{X}$		SD		Range	
	79	84	79	84	79	84	79	84
HSA								
I	47	47	71.47	48.94	122.63	59.80	569	179
II	35	35	153.94	29.46	235.98	39.34	821	189
III	7	20	78.00	55.05	39.85	63.11	109	188
IV	90	102	103.41	105.65	131.32	150.15	659	899
V	28	42	78.75	26.05	60.53	35.98	149	119
VI	18	33	116.72	46.27	79.14	46.28	329	146
TOTAL	225	279	100.38	51.90	111.58	65.74	659	899

Data in Table 25 is particularly noteworthy in that a substantial reduction in time is evident between program entry and initial child assessment. More specifically, while the elapsed time between entry and evaluation was 3.35 months in 1979, the corresponding result for 1984 is 1.73 months, or a 50 percent reduction in delay. This is a significant finding not only with regard to its implications for IEP formulation, but also with regard to the prompt collection of assessment data which is crucial to prospective program efficacy investigation in the future.

Information with regard to the type of data collected on EI children is presented in Table 26.

TABLE 26

Distribution of EI Study Children

With Formalized Assessment Measures:

1979 vs. 1984

Year	Children With Assessments Complete			Children With No Assessment Data
	Norm ref.	Criterion ref.	Both	
1984	$\frac{52}{270}$ (19%)	$\frac{151}{270}$ (56%)	$\frac{67}{270}$ (25%)	$\frac{30}{300}$ (10%)
1979	$\frac{74}{220}$ (34%)	$\frac{106}{220}$ (48%)	$\frac{40}{220}$ (18%)	$\frac{38}{258}$ (15%)

Data in Table 26 is also encouraging in that of 300 folders examined for children served in 1984, only 30, or 10 percent, contained no assessment data. For those with completed measures, 81 percent of the cases examined had received a formalized criterion referenced test designed to yield a child's developmental status within the areas of speech and language, fine and gross motor, cognitive, and social/interpersonal skills. Again, if child levels of functioning are to become a component within the client record system maintained by DPH, it would appear that a reasonable degree of readiness exists to comply with this potential stipulation.

As an extension of the above findings, data with respect to the frequency of administration of measures of child functioning are presented in Table 27.

TABLE 27

Frequency of Administration of Formalized Assessment Measures for EI Study Children: 1979 vs. 1984

Norm Referenced

YEAR	3 mo.*	6 mo.	Irreg.	1x	ND
1984	---	2/52 (4%)	14/52 (27%)	36/52 (69%)	--
1979	---	2/74 (3%)	33/74 (45%)	32/74 (43%)	7/74 (10%)

Criterion Referenced

YEAR	3 mo.	6 mo.	Irreg.	1x	ND
1984	2/151 (1%)	14/151 (9%)	68/151 (45%)	66/151 (44%)	1/151 (1%)
1979	2/106 (2%)	6/106 (6%)	65/106 (61%)	33/106 (31%)	--

Norm and Criterion Referenced

YEAR	3 mo.	6 mo.	Irreg.	1x	ND
1984	---	---	44/67 (66%)	23/67 (34%)	--
1979	---	---	31/40 (78%)	9/40 (22%)	--

*3 mo. - Completed every 3 months
6 mo. - Completed every 6 months
Irreg. - Completed more than once but at irregular intervals
1x - Completed once
ND - No date of assessment available

Data in Table 27 are particularly illuminating in that for those children who received formalized assessments, less than 10 percent are on a systematic basis (e.g., 3, 6, or 12 months); moreover, these findings have remained relatively stable for the past five years. For example, of the criterion referenced measures administered for children served in 1984, 44 percent were utilized on only one occasion, yet these children were enrolled in programs for approximately 12 - 16 months. Similarly, of those children who were assessed two or more times, 45 percent occurred on an irregular basis across subjects. While these intermittent data collection procedures perhaps do not pose a serious problem for program design and service delivery, if performance levels of children are to be monitored in the future within either select EIPs or in their entirety, the issue of timely and consistent data collection will need to be resolved.

Finally, beyond child focused measures included within folders examined, the evaluators also recorded the presence of family centered assessment data. Findings with regard to the elapsed time between program entry and completion of the family evaluation is presented in Table 28.

TABLE 28

Mean Elapsed Time From Date of Entry

to Date of Initial Family Evaluation

	Elapsed Time in Days		
HSA	No. of Families	$\bar{x}$	SD
I	49	2.73	3.07
II	30	10.57	17.71
III	20	1.00	0
IV	103	13.25	33.48
V	35	7.66	22.79
VI	35	1.34	1.41
STATE	272	6.09	13.08

Data regarding the assessment of family status indicates that this evaluation is completed, on average, in less than one week following program admission. However, only 3 of the 272 cases examined (1.10%) included identical information collected again. While this is not to suggest that no data is subsequently maintained on family status (in fact, ongoing narrative reports are commonplace), a standard measure, questionnaire, interview schedule, or observation format is not systematically used over time.

Information with regard to the nature of data collected at program admission regarding family status is presented in Table 29.

TABLE 29

Alternative Methods of Family Assessment

Utilized Within EI Programs in

1983 - 1984

Type of Assessment Instrument

Norm Referenced N(%)	Criterion Referenced N(%)	Program Developed N(%)	None N(%)
11 (4.44%)	---	261 (92.23%)	25 (10.78%)

Areas of Functioning Assessed

Family Status N(%)	Family Needs Assessment N(%)	Parent Attitude N(%)	Parent Stress N(%)	Parent Behaviors N(%)	Direct Parent/ Child Observ. N(%)	Family Env. N(%)	Parent/ Child Relat. N(%)	Parent Perception of Child N(%)
276 (85.45%)	29 (13.00%)	1 (.75%)	----	3 (4.4[illegible])	23 (8.65%)	20 (15.04%)	15 (11.28%)	----

Information regarding assessment of family status reveals that of 297 folders examined, 25 (11 percent) contained no information regarding family level of functioning. Furthermore, 261 (92 percent) of those cases with assessment information present utilized formats developed by individual programs rather than a standardized norm or criterion referenced index. With regard to specific areas of functioning assessed, overall family status was examined in the majority of cases reviewed (86 percent), however, other key areas (e.g., parental behaviors, parent/child relationship, parent perception of child), likely to be influenced by EI services were not documented. While this absence of data certainly does not pose any compliance problems, if the longitudinal client record system is to incorporate dimensions of family functioning, then the restrictiveness of measures used as well as their inconsistent administration will need to be addressed.

D. Automated Information Management System Related to P.L. 89-313 Fiscal, Personnel, and Impact Data

As previously indicated, the final objective of the evaluation effort this year involved the creation of a microcomputer based information management system relating to 89-313 data. This multiple filing structure has indeed been completed and is resident at the Department of Public Health Central office. In brief, representative data includes all financial, outcome, and personnel data included within this report with the exception of specific child and family information from 1979 and 1984.

While these data should contribute to the expediency with which 89-313 funds are reviewed and evaluated on an annual basis, more im-

portantly, DPH representatives have these data in their possession and as such, the technical assistance and support extended by these individuals to programs should become more directed and focused; consequently, not only 89-313 but also overall program monitoring efforts will benefit.

V. SUMMARY AND RECOMMENDATIONS

In summary, the infusion of P.L. 89-313 funds into Early Intervention Programs has had a definite, positive impact on the overall capability of these programs.

1. Specifically, approximately 55 FTEs of various academic disciplines were supported with these funds within FY 84. As a result, a minimum of 1,185 children received increased frequency and duration of service as reflected in their IEPs; 528 additional children were evaluated for program entry, and 698 youngsters received re-evaluations by 89-313 supported personnel. Finally, at least 1,065 families received increased services as a result of 89-313 funds. The range and magnitude of these outcomes clearly suggest that they would not have occurred otherwise.
2. The evaluation data reflects remarkable consistency on the part of Early Intervention Programs relative to the fidelity between contractural obligations and actual expenditures. Quite simply, EIPs stringently adhered to their contracts and moreover, expended funds on activities and services for which the grant was initially intended.
3. The evaluation procedure has also revealed substantial efficiency and equitability in the contract approval and management process which has resulted in the prompt initiation of service to children and their families.
4. Population data examined over the last five year period indicate a 100 percent increase in the number of EI children

served. Detailed scrutinization of these data reflect that this gain is primarily attributable to children classified as BIOLOGICAL and furthermore, that the underpinnings of these changes appear to be related to reduced infant mortality and prompt referral to EI programs.

5. Examination of prevalence data with regard to diagnosed special needs children from birth to nine reveal significant disparities between 0-3, 3-5, and 5-9 chronological age clusters. Data appear to suggest that significant expansion of EI and preschool special needs populations should occur such that programs can attempt to modulate the serious learning and behavioral problems which become manifest during the primary grades.
6. Historical data as well as current trends in pediatric medicine appear to suggest that the EI population, at least in the near future, will be predominantly comprised of children classified as BIOLOGICAL and ESTABLISHED. Evidence also appears to indicate potential increases in the cost of early intervention services per client, and furthermore, that waiting lists may become an acute problem if current trends and financing remain stable.
7. Child records examined for cases served in 1979 and 1984 reveal a 27 percent reduction in age at EI program entry, indicate that 90 percent of current children served have received a formalized assessment, and 89 percent of families are assessed at program entrance. In both instances however,

data is collected only intermittently beyond this initial assessment which seriously restricts the opportunities for conducting program efficacy investigations.

Recommendations for the 89-313 process and for Early Intervention Programs in general are as follows.

1. Viewed as a whole, the distribution of programs throughout the Commonwealth is not necessarily consistent with documented or projected need. Furthermore, discrete concentrations of programs can be observed wherein 4 - 6 programs co-exist within a ten mile radius. While these programs have developed their unique identity and function well independently, very few cooperative service affiliations have been reached and as a consequence, the specific strengths of programs do not generalize to the region. Additional data is necessary on the distribution of existing resources with alternatives for ways in which the established capability of each program can be exported to other EI services throughout the state. Despite the fact that the majority of EI programs are at least 4 - 5 years old, there appears to be an unevenness in the manner in which services are delivered (e.g., diagnostic evaluations, treatment planning, IEP completion). Improved linkage mechanisms across programs both regionally and state wide is an important aspect of future planning. Moreover, the institution of EI standards accompanied by compliance site visitations by DPH representatives provide not only common, objective criteria which can be applied state wide, but also forms a basis for these linkages.

2. In recognition of the need for a coordinated continuum of diagnostic, educational and therapetuic services for children from birth to five, the United States Department of Education recently appropriated funds for Early Childhood State Planning, Development, and Implementation grants such that each state would conceptualize an eight year written plan relative to all preschool special needs children. These funds, which are scheduled to be awarded to State Departments of Education by October 1, 1984 pending the submission of an acceptable proposal, may provide a vehicle for 2 - 3 small demonstration projects wherein EI programs and LEA sponsored preschool special needs programs may jointly address not only the problematic prevalence data presented herein, but also identify and field test alternatives for reducing the differences in program emphasis (e.g., parental education/support/therapy) from one age cluster to the next.

3. Despite the recent enthusiasm and commitment to Early Intervention, the need to document program effects continues to exist. In the evaluator's judgement, several programs are of sufficient maturity and sophistication that they could initiate prospective data collection procedures and as such, attempt to examine short term as well as longitudinal outcomes of Early Intervention. In this regard, the Department should consider awarding two to three mini research grants, perhaps in the range of $10,000 - $15,000 per award, such that detailed, systematic and longitudinal data collection efforts may be initiated. These awards would provide the opportunity to field test alternative data collection schemes, be utilized

as a vehicle for in-service education regarding program efficacy studies, and make available a data set which fully complements the client record system recently initiated by the Department.

Overall, evaluation data have been presented which provide insight into the current status of Early Intervention Programs and also identifies numerous issues which should be addressed if future program growth and expansion are to be as dramatic and productive as the last five years have witnessed. Thoughtful attention to these details should contribute to and accelerate the existing vitality and strength inherent within these programs.

SUMMATIVE EVALUATION REPORT

AN INVESTIGATION OF THE IMPACT OF P.L. 89-313 FUNDS ON EARLY INTERVENTION PROGRAMS

DEPARTMENT OF PUBLIC HEALTH

COMMONWEALTH OF MASSACHUSETTS

PREPARED BY

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AUGUST 23, 1985

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I. INTRODUCTION

Interest and commitment to handicapped infants and toddlers have markedly increased within recent years. While this concern is attributable, in part, to legislative mandate (P.L. 94-142), numerous studies have identified both immediate as well as persevering benefits which are associated with Early Intervention (EI) programs. In fact, positive outcomes of these efficacy investigations have become so widespread that the prevailing, contemporary perspective is not, "should early intervention services be provided?" but rather, "to whom should they be directed?"

This favorable view of EI programs has resulted in a 14 percent increase in the number of young handicapped children served nationally within the past four years (U.S. Department of Education, 1983). In Massachusetts, the observed increases have been even more dramatic. More precisely, while the reported number of special needs children from birth to three totaled 396 in 1978, the corresponding sum for 1983 was 2,474, or in excess of a 600 percent increase in the number of children served.

In January, 1983, the Department of Public Health (DPH) assumed principal administrative and financial responsibility of the majority (i.e., 44 of 53 programs) of EIPs throughout the state and as such, also became responsible for managing and monitoring P.L. 89-313 funds allocated to these programs. Consistent with the obligation to conduct an independent evaluation of 89-313

supported services, DPH contracted with Thomas T. Kochanek, Ph.D. Associates in December, 1984 to examine all programs receiving such funds.

The evaluation strategy has been designed to investigate the degree of congruence between Early Intervention Program contracts and actual operations, to determine the generic impact of 89-313 expenditures on children and their families, and to examine the overall management of P.L. 89-313 funds.

The purpose of this summative evaluation report is to present data collected relative to each objective and to describe the manner and extent to which receipt of 89-313 funds has enriched the services available for young special needs children and their families.

II. OVERVIEW OF PROJECT

A. Major Objectives

The major objectives of this Project are as follows:

1. To facilitate developmental progress of EIP children within the areas of expressive and receptive language, cognition, social behavior, and fine and gross motor skills.
2. To expand and enhance the diagnostic capability of EIPs such that multi/transdisciplinary evaluations may be completed in a timely and thorough manner.
3. To actively involve parents within the educational planning and implementation process.
4. To provide ongoing parent support, education, therapy, and/or advocacy consistent with the observed needs within families as a whole.

Given the significant differences (i.e., type of children served, staffing patterns, services available, philosophical orientation, etc.) which exist among EIPs, certainly all programs have not committed resources to all four objectives; rather, based upon an internal review of their own capability, programs have appropriately used 89-313 funds to address one or more of these goals. The evaluation process will determine those objectives addressed, examine associated implementation strategies, and from a generic point of view, assess the impact of these procedures on participating children.

B. Population Served

Children eligible for P.L. 89-313 supported services include those who:

1. Are chronologically between birth and three years of age.
2. Participate in a state operated or state supported program.
3. Receive services from DPH with no LEA involvement and have a completed Individualized Education Program (IEP).
4. Are judged to be within one of the following categories (Tjossem, 1976):

Established Risk - those whose early appearing aberrant development is related to diagnosed medical disorders of known etiology bearing relatively well known expectancies for developmental outcome (e.g., Down Syndrome).

Environmental Risk - applies to biologically sound infants for whom early life experiences including maternal and family care, health care, opportunities for expression of adaptive behaviors, and patterns of physical and social stimulation are sufficiently limiting to the extent that, without corrective intervention they impart high probability for delayed development.

Biological Risk - infants presenting a history of prenatal, perinatal, neonatal, and early development events suggestive of biological insults to the developing central nervous system and which, either singly or collectively, increase the probability of later appearing aberrant development.

Table 1 presents the number of programs and children by DPH Health Service Area who met these criteria as of October 1, 1982 and 1983, respectively. Overall, an increase of 308 children (17%) statewide is noted in this Table with the most substantial gains observed in Health Service Areas VI (31%), and IV (19%), and I (15%).

Table 1

Distribution of 89-313 Eligible Children by DPH Health Service Area: 10/1/82 vs. 10/1/83

DPH Health Service Area	10/1/82 No. of EIPs	10/1/82 No. of Eligible Children	10/1/83 No. of EIPs	10/1/83 No. of Eligible Children
I	8	419	8	483
II	5	216	5	242
III	3	132	3	143
IV	17	670	17	799
V	6	229	6	256
VI	5	162	5	213
TOTAL	44	1,828	44	2,136

C. Distribution of Programs by DPH Health Service Area

The Department of Public Health has six, clearly demarcated Health Service Areas (HSA) within the state; as such, all evaluation data have been tabulated and presented consistent with these regions. Early intervention programs resident within these areas are as follows.

HSA I	Chicopee
	Great Barrington
	North Adams
	Northampton
	Pittsfield
	Springfield (Early Childhood Team)
	Springfield (Valley Infant)
	West Springfield
HSA II	Fitchburg
	Gardner
	Hopedale
	Southbridge
	Worcester
HSA III	Andover
	Tewskbury
	West Newbury

	Ashland
	Boston (Fuller)
	Boston (Lindemann)
	Brighton
	Cambridge
HSA IV	Concord
	Dorchester (Bay Cove)
	Dorchester (Mental Health Center)
	Foxborough
	Marlboro
	Newton
	Norwood
	Quincy
	Roslindale
	Waltham
	Weymouth
	Winchester

	Brockton
	Fall River
	Hanson
HSA V	Hyannis
	New Bedford
	Taunton

	Lynn
	Malden
HSA VI	Salem (Cape Ann)
	Salem (Danvers/Salem)
	Stoneham

III. EVALUATION DESIGN

A. Objectives

The principal objectives of this evaluation effort are as follows.

1. To determine the degree of program compliance with P.L. 89-313 regulations and guidelines.
2. To determine the degree of congruence between approved EIP contracts and program operations.
3. To determine the impact of P.L. 89-313 personnel via the utilization of operationally defined, child and family centered outcome and impact categories.
4. To examine the overall management and coordination of P.L. 89-313 funds.

Consistent with these objectives, what follows are a series of implementation activities which have been completed in order to ensure actualization of stated objectives.

B. Implementation Activities

Objective No. 1 — Statutory Compliance and Generic Impact of P.L. 89-313 Expenditures

1.1 To determine the degree of program compliance with P.L. 89-313 regulations and guidelines.

1.2 To determine the degree of congruence between approved EIP contracts and program operations.

1.3 To determine the impact of P.L. 89-313 personnel via the utilization of operationally defined, child and family centered outcome and impact categories.

The three objectives noted above are primarily intended to assess not only the degree of fidelity between statutes, contracts, and program operations, but also to identify areas of amplified diagnostic and/or service capability within EIPs as a direct consequence of receiving 89-313 funds. To this end, all programs have completed a standardized questionnarie (i.e., Early Intervention Program Questionnaire) which includes a distribution of all program staff by Full Time Equivalent (FTE) and funding source, role and function of 89-313 personnel, and accomplishments of these personnel across a range of diagnostic and direct care responsibilities.

In addition, 23 sites have been visited by a member of the evaluation team and has included an administrator interview, confirmation of the accuracy and validity of questionnaire data, identification of discrepancies between approved contracts and actual expenditures, and examination of client records (e.g., diagnostic protocols, IEPs) to validate reported 89-313 outcomes.

Objective No. 2 Overall P.L. 89-313 Grant Management and Coordination

The principal issue to be examined within this component of the evaluation involves the promptness with which 89-313 funds are made available to programs (i.e., after September 1, 1984) and furthermore, the degree to which EIPs translated monies into direct services for children and their families. As such, the evaluators have conducted a serial review of the elapsed time from the

initial date of the grant period (i.e., 9/1/84) to the date of contract approval as well as to the time at which 89-313 supported services were actually initiated. Again, this analysis has been completed for all programs and is aggregated by Health Service Area and the state in its entirety.

C. Evaluation Team

Participants in the completion of this evaluation effort were as follows.

Thomas T. Kochanek, Ph.D.
Principal Investigator

Sally Radford, M.Ed.
Evaluation Associate

Tracy Whirty
Research Assistant

IV. EVALUATION OUTCOMES

A. Statutory Compliance and Generic Impact of P.L. 89-313 Expenditures

The primary data set which addresses the issue of program compliance with the original 89-313 proposal involves staff role and function. That is, examination of the extent to which funds were expended on activities directly related to grant objectives is of focal importance here. Three relevant sources of data exist in this regard: (1) percent of the 89-313 contract which is devoted to personnel related expenses; (2) personnel (by academic discipline and Full Time Equivalent (FTE)) directly supported by these funds; and (3) the respective responsibilities assumed by these employees. Tables 2 and 3 present findings with regard to the line item distribution of 89-313 funds by Health Service Area for FY 84 and 85, respectively.

Table 2

P.L. 89-313 Line Item Budget Allocation

by DPH Health Service Area for FY 84

	Health Service Area*						
Item	I	II	III	IV	V	VI	TOTAL
Personnel	$231,258.	$144,294.	$74,449.	$390,611.	$109,989.	$114,063.	$1,064,664.
Training	2,040.	4,814.	5,892.	3,223.	4,661.	988.	21,618.
Contracted Service	28,290.	4,201.	5,280.	28,570.	24,812.	5,483.	96,636.
Management	8,330.	---	3,603.	550.	3,380.	---	15,863.
Occupancy	12,500.	1,096.	---	8,552.	4,045.	---	26,193.
Transportation	9,884.	749.	2,740.	7,414.	3,615.	1,938.	26,340.
Supplies	3,618.	366.	3,076.	3,629.	4,720.	200.	15,609.
Equipment	635.	---	---	---	270.	---	905.
Indirect Costs	5,125.	---	---	2,966.	1,820.	448.	10,359.
Other	---	---	---	30.	1,088.	---	1,118.
TOTAL	$301,680.	$155,520.	$95,040.	$445,545.	$158,400.	$123,120.	$1,279.305.

*Data Represents 43 Programs

13.

Table 3

P.L. 89-313 Line Item Budget Allocation

by DPH Health Service Area for FY 85

	Health Service Area*						
Item	I (N=4)	II (N=2)	III (N=1)	IV (N=10)	V (N=3)	VI (N=3)	TOTAL (N=23)
Personnel	$142,816.	$55,612.	$43,687.	$276,259.	$63,510.	$55,727.	$637,611.
Training	704.	470.	0.	895.	773.	225.	3,067.
Contracted Service	2,633.	0.	4,175.	41,470.	21,009.	19,622.	88,909.
Management	2,147.	0.	0.	2,816.	1,000.	0.	5,963.
Occupancy	3,723.	0.	0.	6,069.	0.	0.	9,792.
Transportation	3,543.	192.	1,134.	1,699.	528.	1,000.	8,096.
Supplies	2,686.	0.	1,854.	4,368.	1,320.	0.	10,228.
Equipment	400.	0.	0.	0.	0.	0.	400.
Indirect Costs	0.	0.	0.	0.	0.	0.	0.
TOTAL	$158,652.	$56,274.	$50,850.	$333,576.	$88,140.	$76,574.	$764,006.

*Data Represents 23 Programs

14.

Significant findings in these Tables include: (1) while 91% of 89-313 funds (i.e., Personnel and Contracted Services) were expended on professional and paraprofessional personnel in FY 84, this proportion has increased to 95% for FY 85. Given the fact that the major objectives of this Project relate to child and family services, this is indeed a positive finding; (2) that the allocation to training and professional development activities has decreased from 2% (FY 84) to .4% (FY 85) of the total 89-313 award; (3) that indirect costs have been totally eliminated as a line item expense in 1985; and (4) that the amount of funds devoted to transportation has decreased 50% from FY 84 to the current fiscal year.

Data which contrasts the magnitude of the 89-313 award to other sources of funding are presented in Table 4.

Table 4

Source and Extent of Funding

for DPH Early Intervention Programs

Health Service Area	Funding Source*					
	DPH Contracted Funds	DPH State Positions	DMH State Positions	89-313	Other	TOTAL
I	$1,048,044.	$ 385,296.	$ 54,749.	$ 334,932.	$ 44,548.	$1,867,569.
II	797,794.	102,046.	-0-	164,076.	183,821.	1,247,737.
III	586,647.	49,285.	-0-	97,177.	-0-	733,109.
IV	1,576,769.	432,537.	79,742.	519,348.	584,730.	3,193,126.
V	809,246.	212,823.	9,280.	164,055.	-0-	1,195,404.
VI	577,776.	129,222.	-0-	138,312.	94,782.	940,092.
TOTAL	$5,396,276.	$1,311,209.	$143,771.	$1,417,900.	$907,881.	$9,177,037.

*Data Represents All Programs

Data in Table 4 first of all indicate that 89-313 accounts for approximately 15% of a program's operating expenses. It is interesting to note that this is equal to the 1984 percentage yet represents a reduction from previous years (i.e., 1982 = 22%; 1983 = 19%) and appears to be attributable to a substantial increase in state funding to these programs which has been observed within the last two years.

Also of significance is that $907,881., or 10% of the total program budget, has been derived from third party reimbursements and in-kind contributions. This represents a substantial source of income and suggests that the service unit rate structure crafted by DPH has begun to yield extensive benefits and dividends for programs.

Information with regard to the personnel employed by academic discipline and funding source are presented in Table 5.

Table 5

Distribution of FTE Total by Funding Source for DPH Early Intervention Programs for FY 85

FTE Total by Funding Source*

Role	DPH Contracted Funds	DPH State Positions	DMH State Positions	89-313	Other	TOTAL
Director	25.84	2.18	.50	6.29	4.31	39.12
Director's Asst.	4.39	1.00	0	.37	1.48	7.74
Educator	28.11	36.31	.50	12.41	2.04	79.37
Educator Asst.	2.68	12.03	2.16	10.26	.61	27.74
Nurse	19.54	3.60	1.00	4.18	.16	28.48
Occupational Ther.	26.42	2.75	0	6.18	.57	35.92
Paraprofessional	.74	3.88	0	6.08	.06	10.76
Physical Ther.	20.01	.50	.50	5.53	3.71	30.25
Physician	.95	0	.04	.03	.23	1.25
Psychologist	5.11	0	0	1.40	.25	6.76
Secretary/Clerk	18.59	.60	0	1.08	1.34	21.61
Social Worker	22.2	3.00	2.93	6.77	2.96	37.86
Speech & Language Therapist	22.40	1.00	0	8.66	2.31	34.37
TOTAL	196.98	66.85	7.63	69.74	20.03	361.23

*Data Represents All Programs

Data in Table 5 indicate that a total of 69.74 FTEs were purchased with 89-313 funds; of these, the greatest number were educators (18%), educator assistants (15%), and speech and language therapists (12%). These results reflect important differences when contrasted with data for FY 84 (Table 6) in that while 24% of 89-313 funds were expended on educators in 1984, the comparable proportion for 1985 was 33%. Associated with these increases were observed FTE reductions for speech and language clinicians, nurses, physical and occupational therapists, and social workers. Also of interest is that individuals most likely to appear in the "Other" (i.e., third party sources) column include physical therapists, social workers, and speech and language therapists. In short, programs seem to be creating adaptive responses to the service unit reimbursement structure recently implemented by DPH. While the appropriateness and ingenuity of these responses are indisputable, caution must also be exercised to insure that 89-313 does not become an exclusive funding source for individuals who are not readily accommodated by other fiscal support systems.

Table 6

Number of Professionals Supported With

89-313 Funds By Academic Discipline for FY 84

HSA	Admin.	Aide	Educator	Nurse	Occup. Ther.	Physician	Phys. Ther.	Psych.	Secretary	Soc. Wrk.	Sp./Lang. Ther.
	Academic Discipline										
I	.55*	1.15	2.5	2.0	.68	---	1.15	---	.54	1.50	2.46
II	.40	.50	---	---	1.28	---	.45	.55	1.16	1.91	1.04
III	.28	---	.70	.83	.49	---	.75	.15	.75	.18	---
IV	.98	3.35	2.61	1.87	.23	---	2.47	.4	.63	3.29	3.24
V	---	.59	---	.50	1.40	---	.60	---	---	.93	2.20
VI	---	---	1.60	---	1.97	---	1.12	---	---	.20	.61
STATE	2.21	5.59	7.41	5.20	6.05	---	6.54	1.10	3.08	8.01	9.55

*Full Time Equivalent

Data presented in Table 7 relative to the FTE distribution by funding source are highly consistent with results previously reported in that of 361.23 individuals employed by Early Intervention Programs, 69.74 (19%) are supported by 89-313 funds. Dependence upon 89-313 monies ranges from a low of 13% (HSA V) to a high of 26% (HSA I). Overall, when data are viewed according to both fiscal as well as FTE perspectives, clearly, these funds have been expended consistent with 89-313 statutes in that they are supplementary in nature to program operations.

Table 7

Distribution of FTE Total by

Funding Source and Health Service Area

Health Service Area	FTE Total by Funding Source					
	DPH Contracted Funds	DPH State Positions	DMH State Positions	89-313	Other	TOTAL
I	36.85	13.85	3.00	18.65	.50	72.85
II	27.37	5.05	0	6.43	4.38	43.23
III	24.72	2.75	0	4.38	0	31.85
IV	55.51	24.44	3.47	25.26	13.05	121.73
V	32.24	13.30	1.16	7.28	.03	54.01
VI	20.29	7.46	0	7.74	2.07	37.56
TOTAL	196.98	66.85	7.63	69.74	20.03	361.23

Finally, with regard to the role and function assumed by individuals supported with 89-313 monies, EI administrators were requested to indicate the distribution of professional time across a range of responsibilities which included not only DPH defined service units but also other potential supplementary services as well. Operational definitions used to report these data were as follows; additionally, results derived from all program questionnaires are reflected in Table 8.

Home visits: A face-to-face meeting at the client's home or an approved setting outside of the center-based site, with the client, the client's caregiver, or both, and professional staff member(s) for the purpose of furthering the client's developmental progress. A home visit must be provided for a scheduled period of time not to exceed two hours.

Center based individual visits: A face-to-face meeting at an early intervention program's site, of one client or one client's caregiver, or both, with professional staff member(s) for the purpose of furthering the client's developmental progress. Center based individual visits must be provided for a scheduled period of time ranging from

one to two hours. Center based individual visits provided in conjunction with group services, however, may be provided for a period of time which is less than one hour.

Child focused groups: A face-to-face meeting at an early intervention program's site, of a group of enrolled clients with professional staff member(s) for the purpose of furthering the clients' developmental progress. Child focused groups must be provided for a scheduled period of time ranging from one to two and one half hours.

Parent focused groups: A face-to-face meeting of a group of clients' parents and persons filling the role of parents (for example, a grandparent, foster parent or guardian but not a day care worker) with professional staff members, for the purpose of support and guidance. A parent focused group must be provided for a scheduled period of time not to exceed two hours.

Screenings: An initial face-to-face meeting of a client and a client's caregiver with a professional staff member to determine whether the client would be appropriately placed in an early intervention program. A screening is limited to two working hours.

Assessments: A comprehensive evaluation of the child's developmental status and family situation, involving the use of a normed developmental assessment tool and measuring fine and gross motor skills, cognitive ability, communication skills, affect and temperament, self care and feeding skills, socialization, family interactions, and social and economic support systems available to the family. An assessment is limited to six working hours.

Case consultation: Includes all consultative sessions (i.e., non-direct care) related to a specific client or his/her family. Sessions may involve interpretation of diagnostic information and assistance in IEP formulation and implementation but do not involve child and/or parent contact. These con-

sultations include both staff to staff interactions as well as services provided by professionals external to the EI program.

Casefinding: Includes all activities related to the identification of potential program clients. Representative activities include sessions with pediatricians or other health providers, new-born nursery and NICU personnel, day care homes and agencies, and community and advocacy groups.

Case management: Includes all sessions with individuals and agencies on behalf of specific clients and their families. These agencies may include housing bureaus, other state agencies (e.g., DMH, DPW, DYS, Corrections, DSS), health insurance agents, employers, attorneys, courts, etc.

Crafting and/or facilitation cooperative service agreements: Includes all activities which relate to the creation and/or implementation of cooperative service agreements between the EI program and other day care, nursery, DMH, DSS, etc. programs.

Providing personnel development/in-service education activities:	Includes all generic training sessions and discussions relating to the acquisition of new and amplified competencies of program staff. These sessions are <u>not</u> child or family focused but rather deal with topics, issues or skills which are central to ongoing program improvement.
Miscellaneous non-direct case functions:	Includes all general responsibilities such as records maintenance and report writing, travel, staff meetings, etc.

Table 8

Distribution of 89-313 Staff Time by Function

for FY 85

Health Service Area	Staff Function*											
	Home Vis.	Center (Ind.)	Center (Grp.)	Parent Grp.	Screen-ing	Assess.	Case Con.	Case find-ing	Case Mgt.	Dev. Coop. Serv. Agree.	Train-ing	Misc.
I	19.3**	4.7	20.3	.64	4.3	6.6	6.5	3.2	8.9	1.9	2.3	21.6
II	16.1	11.5	15.6	.4	2.0	9.1	11.0	3.3	6.0	2.9	4.8	17.2
III	18.6	2.8	5.5	3.7	2.9	16.6	14.1	1.9	8.2	1.9	4.5	19.03
IV	15.3	5.1	16.5	3.0	1.4	10.1	11.6	2.3	7.0	.9	3.2	23.7
V	19.3	6.7	12.6	.8	.3	11.5	12.2	.5	4.6	.5	1.8	29.3
VI	12.9	13.7	13.1	3.1	.7	5.35	16.3	.8	5.3	2.1	4.5	22.3
STATE	16.9	7.4	13.9	1.9	1.9	9.9	12.0	2.0	6.7	1.7	3.5	22.2

*Data Represents All Programs

**Mean Percent of 89-313 Staff Time Devoted To This Function

Although these operational definitions were not used in previous evaluations, and therefore, precise comparisons across Fiscal Years are, unfortunately, not possible, examination of comparable data for FY 84 (Table 9) reveals several significant findings: (1) that while 35% of 89-313 staff time was devoted to direct child service in 1984, approximately 38% was expended on similar functions (i.e., Home Visits, Center Based Individual and Group Contacts) in 1985; (2) that the percentage of time devoted to child evaluations has remained almost constant (i.e., 1984 = 14%; 1985 = 12%); (3) that miscellaneous functions (e.g., maintenance of records, travel, phone, staff meetings) performed by 89-313 supported personnel has not changed appreciably (i.e., 1984 = 26%; 1985 = 22%); and (4) that while parent education/support/therapy evidences a decline from 11% (1984) to 2% (1985), this is attributable to at least three factors: (a) that the operational definitions of these services across fiscal years are substantially dissimilar; (b) that many parent education/support activities are accounted for in Home Visits and Center Based Individual Visits reported in 1985; and (c) that the previously observed increases in the number of educators supported with 89-313 funds perhaps suggests that these individuals are not assuming Parent Group responsibilities as defined in FY 85.

Overall, these data imply that despite the fact that changes have been observed in the academic orientation of individuals likely to be supported with 89-313 funds, functions assumed have remained relatively constant. In short, while the service unit reimbursement

process has precipitated modifications in staff configurations by funding source, it also appears that no substantive change in service, at least via 89-313 funds, has occurred within the past twelve months.

Table 9

Distribution of 89-313 Staff Time

by Function for FY 84

HSA	Direct Child Service	Child Evaluation	Parent Educ./ Supp./Therapy	Case Consult.	In-Service Education	Maintenance of Records	Travel, Phone, Staff Mtgs.
I	39.54*	9.57	10.65	7.71	2.67	13.22	16.64
II	33.17	16.43	11.79	12.61	6.08	9.58	10.34
III	21.47	19.00	14.00	10.93	3.33	18.20	13.07
IV	33.56	10.94	9.98	13.04	4.15	14.21	14.12
V	40.72	13.22	10.63	8.17	2.46	13.22	11.58
VI	41.67	12.50	8.97	6.75	5.59	13.02	11.50
STATE	35.02	13.61	11.00	9.87	4.05	13.58	12.88

*Percentage of professional time devoted to this function

Finally, in order to determine the impact of 89-313 funds, ten generic outcomes were identified which were perceived as most likely to be affected by the infusion of 89-313 funds. These outcomes included:

Screening:	As previously defined.
Assessment:	As previously defined.
Annual IEP review:	Includes all sessions which involve an annual review and analysis of child progress by program personnel and parents and also involves the formulation of the contents of a new IEP for the forthcoming year. If this process is directly associated with the collection of standardized, assessment information (as previously defined), then it should be recorded in the "Assessment" column only.
Home visits:	As previously defined.
Center based individual visits:	As previously defined.
Child focused groups:	As previously defined.
Individual (parent) support/ guidance:	Includes all sessions conducted with the parent(s) either in the home or center which involve general emotional support and guidance.

Group (parent) support/guidance:	Includes all sessions conducted with groups of parents which involve general emotional support and guidance.
Parent education/ training:	Includes all individualized and group sessions with parents which deal with topical issues such as developmental milestones, behavior management, strategies for facilitating motor and language skill acquisition, position and handling techniques, etc.
Parent therapy:	Includes all individualized and group sessions with parents which address unresolved conflicts, emotions, needs and issues which significantly interfere with effective parent functioning and/or interpersonal relationships and occupational functioning. These sessions are usually ongoing in nature, involve close, "therapeutic relationships", and are typically provided by social workers (L.C.S.W. or MSW) or clinical psychologists.

Each program administrator was requested to produce a child count associated with each of these outcomes. The evaluator, within the context of the site visitation, then requested written substantiation (e.g., diagnostic reports, IEPs, etc.) for all child-

ren claimed within the various outcome categories. In many instances, where significant numbers of children were involved in varying degrees in programs, the administrator simply permitted the evaluator to examine all child folders for purposes of verification of administrator counts. As a result of this document review, 1,474 records were examined by the evaluators. Of these, 1,200 contained completed IEPs. Table 10 presents the distribution of these data by Health Service Area.

Table 10

Number of Child Records
Examined With IEPs Present
by DPH Health Service Area

Health Service Area	Folders Examined*	IEPs Present
I	256	214
II	126	95
III	101	83
IV	641	535
V	163	133
VI	187	140
TOTAL	1,474	1,200

*Data Represents 23 Programs

Of significance in Table 10 is the fact that while 81% of the folders examined in 1985 contained completed IEPs, comparable findings for previous years were as follows: 1984 = 82%; 1983 = 91%; 1982 = 83%; 1981 = 80%. Underlying factors which account for these differences include: (1) waiting lists have become more commonplace and as a result, many folders included new referrals which had not yet been processed; and (2) programs in general are serving an unserved number of neonates, and many transdisciplinary teams do not attempt to develop an IEP until the child is at least 3 months of age. Overall, in the evaluator's judgement, programs have revealed an earnest attempt to develop a detailed service plan for all children and their families upon admission and accordingly, non-compliance questions in this instance seem unfounded.

Data with regard to outcomes directly attributable to 89-313 funds are presented in Tables 11, 12, and 13. It is significant to note that entries into these tables are duplicated counts; that is, one child may have received more than one type of service and thus, may appear in several outcome columns.

Table 11

P.L. 89-313 Staff Outcomes: Number of Children Evaluated

Health Service Area	N	Screening		Outcome Assessment		Annual IEP Review	
		Admin.*	Eval.**	Admin.	Eval.	Admin.	Eval.
I	4	77	59	182	162	62	48
II	2	4	4	90	35	46	22
III	1	5	5	36	36	14	14
IV	10	28	22	234	202	88	51
V	3	13	9	68	59	18	15
VI	3	6	4	169	161	117	54
TOTAL	23	133	103	779	655	345	204

*Reported by Administrator
**Confirmed by Evaluator

Table 12

P.L. 89-313 Staff Outcomes: Number of Children With IEP Objectives

Outcome

Health Service Area	N	Home Visits		Center Based Ind. Visits		Child Focused Groups	
		Admin.*	Eval.**	Admin.	Eval.	Admin.	Eval.
I	4	111	104	7	7	106	106
II	2	20	18	33	32	32	27
III	1	19	19	1	1	32	32
IV	10	133	95	63	41	277	269
V	3	24	94	23	23	63	63
VI	3	33	27	63	55	29	29
TOTAL	23	340	287	190	159	539	526

*Reported by Administrator

**Confirmed by Evaluator

Table 13

P.L. 89-313 Staff Outcomes: Number of Families Served

Health Service Area	N	Outcome: Ind. Support/ Guidance		Group Support/ Guidance		Parent Education/ Training		Parent Therapy	
		Admin.*	Eval.**	Admin.	Eval.	Admin.	Eval.	Admin.	Eval.
I	4	60	60	26	26	90	90	0	0
II	2	25	25	0	0	57	57	0	0
III	1	1	1	9	9	8	8	0	0
IV	10	73	41	58	58	73	72	1	1
V	3	45	26	6	6	28	28	0	0
VI	3	20	20	1	1	76	76	0	0
TOTAL	23	224	173	100	100	332	331	1	1

*Reported by Administrator

**Confirmed by Evaluator

Major findings with regard to the impact upon service delivery of 89-313 funds are as follows:

1. That of the ten operationally defined service units, 89-313 funds are most likely to support assessments, child focused groups, parent education/training, and home visits; least frequent are screenings and parent therapy. Also of importance is the fact that for these modal services, the occurrence of appropriate documentation being present ranged from 84% to 99%.
2. Despite the fact that outcome categories used in 1985 were somewhat incongruous with those used previously, nevertheless, gross comparisons are possible. For example, while the number of child focused evaluations conducted in FY 84 approximated 28 per program, the corresponding finding for 1985 is 33 per program, or an 18% increase. Similarly, while the number of families receiving services via 89-313 funds equalled 25/program in 1984, 26 families per program were reported as direct beneficiaries of these services in 1985. These data substantiate previous observations in that though changes are evident in the training and certification/licensure of individuals supported with 89-313 funds, no major reductions in service are noted from 1984 to 1985 despite the fact that these individuals are not reimbursed according to service units provided. In short, productivity of 89-313 supported individuals has not appreciably changed despite rather dramatic modifications in the funding and reimbursement schemes in Early Intervention Programs.

3. That of the 89-313 supported services provided to both children and their families, individualized and group contacts with youngsters appear with similar frequency (i.e., 446 vs. 526), while services to families are almost twice as likely to occur within an individualized rather than group context. Also of interest is that of 23 programs visited, only one family was reported as receiving therapy with 89-313 funds.

In summary, as the evaluators have attempted to determine the quantifiable outcome of 89-313 funds on Early Intervention Programs, it is apparent that these monies have had a definite impact on the direct service and diagnostic capability of programs with approved contracts. EIPs can, in fact, point to 758 additional children evaluated; 972 IEPs having been directly affected, and 605 families having received increased services by 89-313 supported personnel. It must be remembered that these data reflect the minimum impact of 89-313 monies since all programs were not visited and furthermore, that in most instances, 3 to 4 months of the grant period remained subsequent to the date of the site visit.

B. Overall P.L. 89-313 Grant Management and Coordination

Perhaps the major source of data regarding the overall management of P.L. 89-313 funds relates to the amount of elapsed time from the initial date of the grant period (September 1, 1984), to the date of AF-7 approval (time at which money is earmarked for a specific program and the effective date after which services are re-

imburseable), to the contract approval date (time at which vouchers may be submitted for payment), and finally to the date at which 89-313 supported services actually begin. In this regard, all AF-7 approvals were issued commensurate with the beginning of the grant period and furthermore, 89-313 services continued without interruption from FY 84 to FY 85. While this continuity is attributable, in part, to a substantial carry-over of 89-313 personnel across fiscal years, nevertheless, this finding is particularly noteworthy given the significant increase in volume, both in dollars as well as other significant undertakings, which the Department has had to contend with this year.

Overall, these data as well as information presented earlier regarding the apparent congruence between the 89-313 proposal, line item expenditures, personnel hired, and staff role and function indicate a sound and efficient management process. P.L. 89-313 services have been initiated on the initial day of the FY 84 grant period; given the magnitude of funds involved and the extensive number of vendors and programs, this is an extraordinarily positive result.

V. SUMMARY AND RECOMMENDATIONS

In summary, the infusion of P.L. 89-313 funds into Early Intervention Programs has had a definite, positive impact on the overall capability of these programs.

1. Specifically, approximately 70 FTEs of various academic disciplines were supported with these funds within FY 85. As a result, a minimum of 972 children received increased frequency and duration of service as reflected in their IEPs; 758 additional children were evaluated by 89-313 supported personnel, and finally, at least 605 families received increased services as a result of 89-313 funds. The range and magnitude of these outcomes clearly suggest that they would not have occurred otherwise.
2. The evaluation data reflects remarkable consistency on the part of Early Intervention Programs relative to the fidelity between contractural obligations and actual expenditures. Quite simply, EIPs adhered to their contracts and moreover, expended funds on activities and services for which the grant was initially intended.
3. The evaluation procedure has also revealed substantial efficiency and equitability in the contract approval and management process which has resulted in the prompt initiation of service to children and their families. Moreover, current evaluation data, when contrasted with information reported in previous years, have revealed dramatic increases in not only the population served by these pro-

grams, but also in the extent to which programs are financially underwritten by the Commonwealth as well as avenues which have been created to gain access to additional revenues. Clearly, the Department of Public Health has exercised convincing leadership and management with regard to Early Intervention Programs including the efficient and legitimate use of P.L. 89-313 funds.

4. While the past 36 months have revealed unparalleled expansion of EI services, several significant challenges remain. For example, information recently made available by the U.S. Department of Education indicates that, on the basis of contemporary research findings as well as best known clinical practices, states should be serving approximately 3 to 5% of the number of live births in Early Intervention Programs. Given that most states, including Massachusetts, have achieved about one-third of this goal, several critical questions remain unanswered: (1) What screening and/or casefinding procedures need to be implemented in order to detect this population with minimum error (i.e., false positives and negatives)?; (2) What specific eligibility criteria facilitate the reliable and valid identification of the population?; (3) Is the existing continuum of EI services sufficiently comprehensive to appropriately serve this population in a cost effective manner?; (4) What is the most appropriate

match between a child's identified needs and services provided?; (5) What constitutes the parameters of family focused services within EI programs?; (6) What is the role of Early Intervention with regard to prevention of handicapping conditions in children?; and (7) What are the ingredients of a fluid and continuous intervention system for children from birth to five?

Certainly this is not intended to serve as an exhaustive list of critical issues affecting the future of Early Intervention, nor is it to suggest that substantial gains have not been observed within the past five years. Rather, it is to suggest that numerous issues need to be carefully addressed if future program growth and expansion are to be as dramatic and productive as recent years have witnessed. Thoughtful attention to these details should contribute to and accelerate the existing vitality and strength inherent within these programs.