Massachusetts Department of Public Health

Analysis of Family Survey Data Addressing

Part C SPP/APR Indicator #4

State Report

2021–2022

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SECTION 1

Executive Summary

In accordance with federal reporting requirements mandated by the U.S. Department of Education, Office of Special Education Programs (OSEP) under the Individuals with Disabilities Education Act (IDEA 2004), Part C Lead Agencies must report annually on performance indicators related to early intervention services for children ages birth to three. This report presents findings of a survey conducted by the Massachusetts Department of Public Health (MDPH) to address Indicator #4, the "percent of families participating in Part C who report that Early Intervention services have helped the family a) *know their rights*, b) *effectively communicate their children's needs*, and c) *help their children develop and learn*".

The survey administered by the MDPH included one rating scale developed and validated by the National Center for Special Education Accountability Monitoring (NCSEAM). The 23-item Impact on Family Scale (IFS) measures the extent to which Early Intervention helped families achieve positive outcomes, including the three outcomes specified in Indicator #4.

Response Rate

A total of 6,032 surveys were distributed to families in 59 Early Intervention Programs (EIPs). Overall, 2,804 completed surveys were returned, for a **return rate of 46.49%** (2,804/6,032). All returned surveys provided usable data. The number of returned surveys exceeds the minimum number required for an adequate confidence level based on established survey sample guidelines (e.g., https://www.surveysystem.com/sscalc.htm).

Data from the scale was analyzed through the Rasch measurement framework. For the IFS scale, the analysis produces a measure for each survey respondent. Individual measures can range from 0 to 1,000. For the IFS, each family's measure reflects the extent to which the family perceives that Early Intervention has helped them achieve positive family outcomes. The IFS measures of all respondents were averaged to yield a mean measure reflecting the overall performance of the state in regard to the impact of Early Intervention on family outcomes.

As noted, OSEP requires that the state's performance be reported as the percent of families who report that Early Intervention services helped them achieve specific outcomes. Deriving a percent from a continuous distribution requires application of a standard, or cut-score. The MDPH elected to apply the Part C standards recommended by a nationally representative stakeholder group convened by NCSEAM. The recommended standards, established based on item content expressed in the scale, were as follows: for Indicator 4a, *know their rights*, a measure of 539; for Indicator 4b, *effectively communicate their children's needs*, a measure of 556; and for Indicator 4c, *help their children develop and learn*, a measure of 516.

The following points represent the major findings related to Indicator #4:

Massachusetts' Mean Measure on the IFS

The mean measure on the IFS is 703 with a standard deviation of 174. The standard error of the mean is 3.3, and the 95% confidence interval for the mean is 696.8–709.6. This means that there is a 95% likelihood that the true value of the mean lies between these two values.

Massachusetts' Percent on Indicators

Indicator 4a: The percent of families who reported that Early Intervention services helped them *know their rights* is **83.5%**. The 95% confidence interval for the true population percentage is 82.1%–84.8%. This means that there is a 95% likelihood that the true value of the state percentage for Indicator 4a is between these two values.

Indicator 4b: The percent of families who reported that Early Intervention services helped them *effectively communicate their children's needs* is **80.0%**. The 95% confidence interval for the true population percentage is 78.5%–81.4%.

Indicator 4c: The percent of families who reported that Early Intervention services helped them *help their children develop and learn* is **91.4%**. The 95% confidence interval for the true population percentage is 90.3%–92.4%.

See Appendix A for Massachusetts' historical response rates and Indicator #4 percentages (figures for 16 years are available).

SECTION 2

Background

Federal Requirements

State Lead Agencies under Part C of the IDEA are required to report data annually addressing key performance indicators. Each state is required to submit an Annual Performance Report (APR) to OSEP addressing established targets set in the State Performance Plan (SPP). Indicator #4, the "percent of families participating in Part C who report that Early Intervention services have helped the family a) *know their rights*, b) *effectively communicate their children's needs*, and c) *help their children develop and learn*", is one of the indicators in the federal accountability system. Performance on the indicator is reported annually.

Survey Instrument

The IFS was developed by NCSEAM to provide states with valid and reliable instruments to measure (a) positive outcomes that families experience as a result of their participation in Early Intervention and (b) families' perceptions of the quality of Early Intervention services. Items were developed with substantial input from families and other key stakeholders across the country.

As part of its National Item Validation Study, NCSEAM collected data from a nationally representative sample of over 1,700 families participating in early intervention. Results of NCSEAM's data analyses supported the high reliability and validity of both scales. It was determined that scale reliabilities of .90 or above could be achieved with 22 items for the IFS. NCSEAM provided states with an appropriate sample item set for each scale, as well as instructions for customizing the scale by drawing on the larger bank of piloted items that NCSEAM made available on its website. The MDPH elected to use 23 items for the IFS.

Survey Administration

During the initial stages of the COVID-19 pandemic, programs ceased in-person meetings, instead offering Telehealth services and meetings to children and families via online applications. In the absence of face-to-face meetings, the typical method of survey distribution (i.e., paper surveys provided to families) was replaced with an online survey. However, over the last year, many programs were able to resume in-person meetings. Some programs continued providing a hybrid model (including both in-person and online meetings) to accommodate families that were still unable to attend in-person meetings. The primary survey delivery method for the past year was the online version, which was made available in seven languages (i.e., English, Spanish, Portuguese, Haitian-Creole, Vietnamese, Chinese, and Arabic). Programs distributed unique survey logins to families in-person, via online meetings, and by other electronic means. If requested, families still had the option of completing the paper survey, which was available in five primary languages (i.e., all of the previously listed languages except for Chinese and Arabic). The majority of respondents completed online versions of the survey. Only a small number of paper surveys were distributed to families. Online logins and paper surveys were distributed to families in October 2021 and April 2022; the survey return deadline was May 31, 2022.

A total of 6,032 surveys, in English, Haitian-Creole, Portuguese, Spanish, Vietnamese, Chinese, and Arabic, were distributed to families across 59 EIPs; 2,804 were returned (including 2,619 Web submissions), for a response rate of 46.49%. See Appendix B for a sample 2021–22 family survey.

Standards

The MDPH elected to apply the standards recommended by NCSEAM as a way of deriving the percents to be reported for Indicators 4a, 4b, and 4c.

To establish a recommended standard, NCSEAM convened a group of nationally representative stakeholders, including parents of children with disabilities, state directors of special education, state early intervention coordinators, district and program personnel, advocates, attorneys, and community representatives. Participants were invited to examine a set of items from the IFS, laid out in their calibration order (see Table 9). The items toward the bottom of the scale, having lower calibrations, are items that families tend to agree with most. The items toward the top of the scale, having higher calibrations, are items that

families tend to agree with least. Because of the robust structure of the scale, a respondent who agrees with a given statement will have a very high likelihood of agreeing, or agreeing even more strongly, with all the items below it on the scale.

For Indicator 4a, the stakeholder group agreed that families needed to endorse all items up to and including the item, “Over the past year, Early Intervention services have helped me

and/or my family, know about my child's and family's rights concerning Early Intervention services”. For Indicator 4b, the stakeholder group agreed that families needed to endorse all items up to and including the item, “Over the past year, Early Intervention services have helped me and/or my family, communicate more effectively with the people who work with my child and family”. For Indicator 4c, the stakeholder group agreed that families needed to endorse all items up to and including the item, “Over the past year, Early Intervention services have helped me and/or my family, understand my child's special needs”. These standards were operationalized by designating as the numerical standard the measure that, in each case, corresponds to the threshold item’s calibration. For Indicators 4a, 4b, and 4c, the measures representing the standards are 539, 556, and 516, respectively. This ensures that in each case, families with a measure at or above the standard have a .95 likelihood of agreeing with the threshold item.

SECTION 3

Characteristics of the Sample Data

3.1. Distribution of Race/Ethnicity in the Sample

Table 1 displays the distribution of race/ethnicity in the survey sample.

Table 1. Race/Ethnicity Distribution

Race/Ethnicity	*N*	Percentage*
White	1,584	57%
Black or African-American	156	6%
Hispanic or Latino	519	19%
Asian or Pacific Islander	156	6%
American Indian or Alaskan Native	8	<1%
Multi-racial	353	13%
Missing	28	1%

3.2. Distribution of Survey Language in the Sample

Table 2 displays the distribution of the sample by survey language.

Table 2. Survey Language Distribution

Version	*N*	Percentage*
Arabic	2	<1%
Chinese	20	<1%
English	2,605	93%
Haitian Creole	3	<1%
Portuguese	28	1%
Spanish	143	5%
Vietnamese	3	<1%

* Percentages have been rounded and may not sum to exactly 100%.

SECTION 4

Results Pertaining to Indicator #4

4.1. Distribution of the IFS Measures

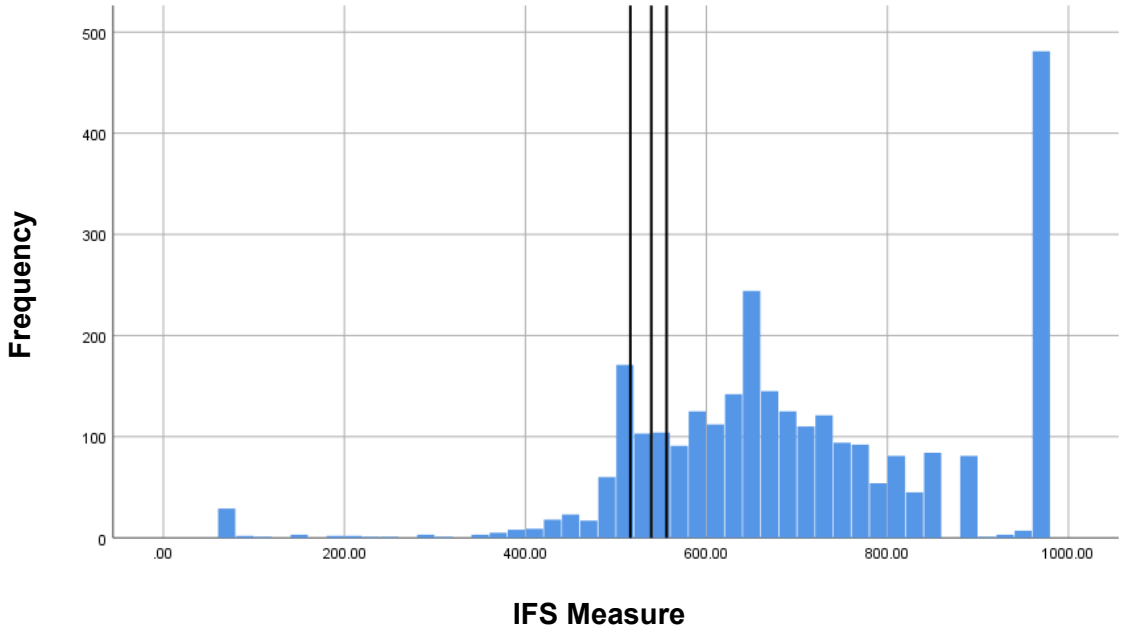
The properties of the distribution of IFS measures for the 2,804 families who responded to the IFS items are shown in Table 3. The sample mean is 703. The standard deviation of measures is 174, indicating that the average distance of measures from the mean measure is 174 units. The standard error of the sample mean, that is, the expected error of the sample mean in estimating the true population mean for Massachusetts, is 3.3. The 95% confidence interval for the true population mean for Massachusetts extends from 696.8 to 709.6, indicating that we are 95% confident that the true population mean for families of children served by the MDPH's Early Intervention Program lies somewhere in this range.

Table 3. Properties of IFS Measures

Sample Mean	Standard Deviation	Standard Error of the Sample Mean	95% Confidence Interval for the Population Mean
703	174	3.3	696.8–709.6

Figure 1 displays the distribution of the 2,804 IFS measures. Each bar indicates the number of families with measures at the value indicated on the x-axis. The vertical black lines correspond to the three standards applied to Indicator 4a (539), 4b (556), and 4c (516).

Figure 1. Distribution of IFS Measures



The distribution of measures approximates a normal distribution with one exception. An extremely high number of respondents with measures at the positive end of the scale are represented by the high bar at the extreme right of the graph. These individuals responded in the "very strongly agree" category to each and every item. When individuals fail to make any distinction among items that are known to have different levels of agreeability, they are said to display a "response set," that is, a uniform way of responding that makes it hard to judge whether the responses are authentic or are, in effect, a way of complying with the task that does not really provide useful information. This phenomenon should be taken into consideration when interpreting the findings.

4.2. Interpretation of the Mean IFS Measure

The state's performance on the IFS conveys information that goes beyond the three outcomes that are addressed in OSEP's Indicator #4. A mean measure of 703 on the IFS indicates that the MDPH is helping families to achieve many positive outcomes. These positive outcomes are evident from the response percentages displayed in Table 4. The table also displays each item's calibration value, to be discussed in Section 6.

Table 4. Percent of Families Expressing Agreement with IFS Items

Item #	Item Calibration	Item *Over the past year, Early Intervention services have helped me and/or my family:*	% Agree in any category	% Strongly/ Very strongly agree
20	498	– do things with and for my child that are good for my child's development.	98%	78%
22	498	– feel that my efforts are helping my child.	97%	77%
23	508	– be more hopeful about my child's future.	97%	75%
3	559	– figure out solutions to problems as they come up.	97%	75%
21	516	– understand my child's special needs. [Indicator 4c]	97%	73%
13	553	– understand how the Early Intervention system works.	97%	72%
6	539	– get the services that my child and family need.	96%	75%
14	534	– be able to evaluate how much progress my child is making.	96%	74%
7	559	– feel more confident in my skills as a parent.	96%	73%
15	559	– feel that my child will be accepted and welcomed in the community.	96%	71%
12	565	– feel that I can get the services and supports that my child and family need.	96%	71%
4	609	– know where to go for support to meet my child's needs.	96%	71%

Table 4. Percent of Families Expressing Agreement with IFS Items (continued)				
Item #	**Item Calibration**	**Item** *Over the past year, Early Intervention services have helped me and/or my family:*	**% Agree in any category**	**% Strongly/ Very strongly agree**
17	556	– communicate more effectively with people who work with my child and family. [Indicator 4b]	96%	70%
16	562	– feel that my family will be accepted and welcomed in the community.	96%	69%
19	539	– know about my child's and family's rights concerning Early Intervention services. [Indicator 4a]	96%	68%
18	546	– understand the roles of the people who work with my child and family.	96%	68%
11	540	– do activities that are good for my child even in times of stress.	95%	69%
10	584	– be more effective in managing my child's behavior.	95%	67%
9	577	– make changes in family routines that will benefit my child with special needs.	95%	64%
5	640	– know where to go for support to meet my family's needs.	94%	64%
8	608	– help other children in my family (if there are other children) adjust to their brother's or sister's needs.	91%	57%
2	656	– know about services in the community.	91%	57%
1	678	– participate in typical activities for children and families in my community.	89%	54%

As seen in the table, 97%–98% of families agreed, with 75%–78% expressing strong or very strong agreement, that Early Intervention services helped them do things with and for their child that are good for their child's development, feel that their efforts are helping their child, and be more hopeful about their child's future.

Approximately 96% of families agreed, with 68%–69% expressing strong or very strong agreement, that Early Intervention services helped them feel that their family will be accepted

and welcomed in the community, know about their child's and family's rights concerning Early Intervention services, and understand the roles of the people who work with their child and family.

Less agreement was found in other areas. Approximately 89%–91% of families agreed, with 54%–57% expressing strong or very strong agreement, that Early Intervention services helped them help other children in their family (if there are other children) adjust to their brother's or sister's needs, know about services in the community, and participate in typical activities for children and families in their community.

For reference, the frequency distribution of responses to all the items in the IFS is provided in Appendix C.

4.3. Performance of the MDPH: Percent of Families Meeting Each of the Standards for Indicator #4

Table 5 presents the percentage of families having an IFS measure that met or exceeded each of the three standards for Indicator #4, as well as a 95% confidence interval for the true population percentage. Note that the confidence interval is asymmetric about the sample percentage, in that there is a greater distance in the confidence interval below the sample percentage than above the sample percentage. The asymmetric confidence interval represents a more accurate confidence interval for percentages than normal-distribution based symmetric confidence intervals (due to the fact that percentages are bounded between 0 and 100). The asymmetric confidence interval reported here is the score interval proposed by Wilson (1927), and described in greater detail in Agresti (1996) and Penfield (2003).

Table 5. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4

	Indicator 4a Percent of families who report that Early Intervention services helped them know their rights (Item 19)	**Indicator 4b** Percent of families who report that Early Intervention services helped them effectively communicate their children's needs (Item 17)	**Indicator 4c** Percent of families who report that Early Intervention services helped them help their children develop and learn (Item 21)
State Target	90.0%	85.0%	93.0%
Percentage	83.5% (2,342 of 2,804 met standard)	80.0% (2,243 of 2,804 met standard)	91.4% (2,563 of 2,804 met standard)
95% Confidence Interval	82.1%–84.8%	78.5%–81.4%	90.3%–92.4%

4.4. Percent of Families Meeting Each of the Standards by Race/Ethnicity

Table 6 presents the percentage of families with measures that met or exceeded each of the three standards, by racial/ethnic category. Please note that the sample was not designed to be representative of race/ethnicity. Therefore, Table 6 is included for illustrative purposes only, as are Tables 7 and 8.

Table 6. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 by Race/Ethnicity

Race/Ethnicity	**Indicator 4a** Percent of families who report that Early Intervention services helped them know their rights (Item 19)	**Indicator 4b** Percent of families who report that Early Intervention services helped them effectively communicate their children's needs (Item 17)	**Indicator 4c** Percent of families who report that Early Intervention services helped them help their children develop and learn (Item 21)
White (*N* = 1,584)	82.6% (1,309 met standard) 95% CI: 80.7%–84.4%	79.0% (1,251 met standard) 95% CI: 76.9%–80.9%	91.0% (1,441 met standard) 95% CI: 89.5%–92.3%
Black or African-American (*N* = 156)	81.4% (127 met standard) 95% CI: 74.6%–86.7%	76.3% (119 met standard) 95% CI: 69.0%–82.3%	89.7% (140 met standard) 95% CI: 84.0%–93.6%
Hispanic or Latino (*N* = 519)	85.7% (445 met standard) 95% CI: 82.5%–88.5%	82.7% (429 met standard) 95% CI: 79.2%–85.7%	91.7% (476 met standard) 95% CI: 89.0%–93.8%
Asian or Pacific Islander (*N* = 156)	84.6% (132 met standard) 95% CI: 78.1%–89.4%	82.1% (128 met standard) 95% CI: 75.3%–87.3%	93.6% (146 met standard) 95% CI: 88.6%–96.5%
American Indian or Alaskan Native (*N* = 8)	87.5% (7 met standard) 95% CI: 52.9%–97.8%	75.0% (6 met standard) 95% CI: 40.9%–92.9%	87.5% (7 met standard) 95% CI: 52.9%–97.8%

Table 6. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 by Race/Ethnicity (continued)			
Race/Ethnicity	**Indicator 4a** Percent of families who report that Early Intervention services helped them know their rights (Item 19)	**Indicator 4b** Percent of families who report that Early Intervention services helped them effectively communicate their children's needs (Item 17)	**Indicator 4c** Percent of families who report that Early Intervention services helped them help their children develop and learn (Item 21)
Multi-racial (*N* = 353)	84.4% (298 met standard) 95% CI: 80.3%–87.8%	81.3% (287 met standard) 95% CI: 76.9%–85.0%	92.6% (327 met standard) 95% CI: 89.4%–94.9%
Missing (*N* = 28)	85.7% (24 met standard) 95% CI: 68.5%–94.3%	82.1% (23 met standard) 95% CI: 64.4%–92.1%	92.9% (26 met standard) 95% CI: 77.4%–98.0%

4.5. Percent of Families Meeting Each of the Standards by Survey Language

Table 7 presents the percentage of families with measures that met or exceeded each of the three standards, by survey language.

Table 7. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 by Survey Language

Survey Language	Indicator 4a Percent of families who report that Early Intervention services helped them know their rights (Item 19)	Indicator 4b Percent of families who report that Early Intervention services helped them effectively communicate their children's needs (Item 17)	Indicator 4c Percent of families who report that Early Intervention services helped them help their children develop and learn (Item 21)
Arabic (*N* = 2)	100% (2 met standard) 95% CI: --	100% (2 met standard) 95% CI: --	100% (2 met standard) 95% CI: --
Chinese (*N* = 20)	70% (14 met standard) 95% CI: 48.1%–85.5%	60% (12 met standard) 95% CI: 38.7%–78.1%	100% (20 met standard) 95% CI: --
English (*N* = 2,605)	83.1% (2,165 met standard) 95% CI: 81.6%–84.5%	79.5% (2,071 met standard) 95% CI: 77.9%–81.0%	91.3% (2,378 met standard) 95% CI: 90.1%–92.3%
Haitian Creole (*N* = 3)	100% (3 met standard) 95% CI: --	100% (3 met standard) 95% CI: --	100% (3 met standard) 95% CI: --
Portuguese (*N* = 28)	82.1% (23 met standard) 95% CI: 64.4%–92.1%	78.6% (22 met standard) 95% CI: 60.5%–89.8%	89.3% (25 met standard) 95% CI: 72.8%–96.3%
Spanish (*N* = 143)	92.3% (132 met standard) 95% CI: 86.8%–95.7%	90.9% (130 met standard) 95% CI: 85.1%–94.6%	92.3% (132 met standard) 95% CI: 86.8%–95.7%

Table 7. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 by Survey Language (continued)

Survey Language	Indicator 4a Percent of families who report that Early Intervention services helped them know their rights (Item 19)	Indicator 4b Percent of families who report that Early Intervention services helped them effectively communicate their children's needs (Item 17)	Indicator 4c Percent of families who report that Early Intervention services helped them help their children develop and learn (Item 21)
Vietnamese (*N* = 3)	100% (3 met standard) 95% CI: --	100% (3 met standard) 95% CI: --	100% (3 met standard) 95% CI: --

4.6. Percent of Families Meeting Each of the Standards by Program

Table 8 presents the percentage of families with measures that met or exceeded each of the three standards, by program.

Table 8. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4 by Program

Program	*N*	Indicator 4a	Indicator 4b	Indicator 4c
Arc of the South Shore/First Early Intervention Program	52	73%	71%	81%
Aspire Early Intervention Program	220	79%	75%	88%
Associates for Human Services Taunton Early Intervention Program	93	80%	76%	91%
BAMSI Early Intervention	24	67%	67%	75%
Bay Cove Early Intervention	51	82%	75%	96%
BEAM Early Intervention	12	58%	58%	83%
Behavioral Health Network EI (BHN Early Intervention)	35	91%	91%	97%
Boston Children's Hospital Early Intervention Program	13	85%	85%	85%
Cambridge/Somerville Early Intervention at Riverside	20	90%	85%	90%
Center for Human Development Early Intervention Program	31	94%	84%	97%
Community Healthlink Lipton Early Intervention Program	70	79%	70%	91%
Criterion Boston Early Intervention Program	19	95%	89%	95%
Criterion Heritage Early Intervention Program	124	87%	84%	93%
Criterion Medford Early Intervention Program	33	79%	76%	82%
Criterion Middlesex Early Intervention Program	72	90%	88%	93%
Criterion Riverway Early Intervention Program	15	80%	73%	87%
Criterion Stoneham Early Intervention Program	47	83%	77%	94%
Criterion Valley Early Intervention Program	140	76%	73%	90%
Criterion Wachusett Early Intervention Program	89	94%	93%	98%
Criterion Worcester Early Intervention Program	41	88%	85%	95%
Dimock Early Intervention Program	2	100%	100%	100%
Eliot Malden Early Intervention Program	9	78%	78%	89%
Enable Early Intervention	29	79%	79%	90%
Harbor Area Early Intervention/North Suffolk Mental Health	29	72%	66%	86%
Kennedy Donovan Center - Cape Cod & Islands Early Intervention Program	11	82%	82%	100%
Kennedy Donovan Center- Attleboro Early Intervention Program	64	88%	80%	97%
Kennedy Donovan Center- Greater Plymouth Early Intervention Program	25	52%	52%	60%
Kennedy Donovan Center- New Bedford Early Intervention Program	36	89%	86%	97%

Table 8. Percent of Respondents Meeting or Exceeding Each of the Standards for Indicator #4, by Program (continued)				
Program	***N***	**Indicator 4a**	**Indicator 4b**	**Indicator 4c**
Kennedy Donovan Center- South Central Early Intervention Program	97	84%	79%	91%
May Center for EI	17	88%	88%	94%
Meeting Street Early Intervention	41	90%	88%	100%
Mentor South Bay Community Services - Early Childhood, Brockton	32	88%	88%	94%
Mentor South Bay Community Services - Early Childhood, Fall River/Swansea	11	100%	100%	100%
Mentor South Bay Community Services - Early Childhood, Framingham	1	100%	100%	100%
Mentor South Bay Community Services - Early Childhood, Lawrence	18	78%	78%	89%
Mentor South Bay Community Services - Early Childhood, Lowell	48	83%	81%	94%
Mentor South Bay Community Services - Early Childhood, Worcester	21	71%	67%	81%
Minute Man Arc Early Intervention Program	55	89%	85%	95%
Northeast Arc EI- Northshore	8	75%	63%	88%
Northeast Arc EI-Cape Ann	71	94%	85%	100%
Northern Berkshire Early Intervention Program	26	85%	77%	92%
Pediatric Development Center Early Intervention Program	30	83%	80%	93%
Pediatric Development Center South Early Intervention Program	13	92%	92%	92%
People, Inc. Early Intervention Program	56	91%	91%	96%
Pernet Early Intervention Program	13	92%	85%	100%
Riverside Early Intervention - Needham	38	74%	68%	82%
Step One Early Intervention Program	60	78%	75%	97%
The Professional Center for Child Development	91	87%	86%	93%
The Reach Program of ServiceNet	49	96%	96%	98%
Thom Anne Sullivan Center	67	79%	75%	87%
Thom Boston Metro Early Intervention Program	21	90%	90%	95%
Thom Charles River Early Intervention Program	49	88%	82%	90%
Thom Marlboro Area Early Intervention Program	12	92%	92%	100%
Thom Mystic Valley Early Intervention Program	103	93%	87%	98%
Thom Neponset Valley Early Intervention Program	62	81%	81%	92%
Thom Pentucket Area Early Intervention Program	102	80%	77%	82%
Thom Springfield Infant Toddler Services	89	80%	78%	90%
Thom Westfield Infant Toddler Services	27	89%	85%	96%
Thom Worcester Area Early Intervention Program	70	76%	71%	83%

SECTION 5

Measurement Framework

The measurement approach used by NCSEAM, known as the Rasch framework, applies a series of parametric models to estimate the properties of each survey item and each respondent in a way that places individuals and items on a common metric (Bond & Fox, 2001; Fischer & Molenaar, 1995; Rasch, 1960; Wright & Masters, 1982). The Rasch approach offers many advantages over typical approaches to survey development. First, it is possible to test whether the items administered belong together, that is, whether they are all related to the construct that the scale is supposed to measure. Ongoing confirmation of the fit of the items helps to maintain the quality of the measurement system. It is also possible to test whether the response categories are operating in the expected fashion. Often, the way in which respondents actually use the response categories does not correspond to the equidistant way in which they are laid out on paper. Extreme categories (e.g., “very strongly disagree”) are sometimes used so infrequently that it makes sense to combine them with an adjacent, less extreme, category (“very strongly disagree/strongly disagree”).

Second, it is possible to determine where each item is located on the measurement ruler. The item’s location is referred to as the item’s “calibration.” Typically, items in a test or survey are not all equal with respect to the amount of the attribute or quality that the items are measuring. It has been empirically demonstrated, in fact, that items in the IFS are not all of equal agreeability. Items range from those that are most likely to draw “agree” responses to those that are least likely to draw “agree” responses. Highly agreeable items have low calibrations; less agreeable items have higher calibrations. Table 9 displays the IFS items in calibration order.

Table 9. IFS Items in Calibration Order		
Item #	**Item Calibration**	**Item** *Over the past year, Early Intervention services have helped me and/or my family:*
1	678	– participate in typical activities for children and families in my community.
2	656	– know about services in the community.
5	640	– know where to go for support to meet my family's needs.
4	609	– know where to go for support to meet my child's needs.
8	608	– help other children in my family (if there are other children) adjust to their brother's or sister's needs.
10	584	– be more effective in managing my child's behavior.
9	577	– make changes in family routines that will benefit my child with special needs.
12	565	– feel that I can get the services and supports that my child and family need.
16	562	– feel that my family will be accepted and welcomed in the community.
7	559	– feel more confident in my skills as a parent.
3	559	– figure out solutions to problems as they come up.
15	559	– feel that my child will be accepted and welcomed in the community.
17	556	– communicate more effectively with people who work with my child and family.
13	553	– understand how the Early Intervention system works.
18	546	– understand the roles of the people who work with my child and family.
11	540	– do activities that are good for my child even in times of stress.
6	539	– get the services that my child and family need.
19	539	– know about my child's and family's rights concerning Early Intervention services.
14	534	– be able to evaluate how much progress my child is making.
21	516	– understand my child's special needs.
23	508	– be more hopeful about my child's future.
22	498	– feel that my efforts are helping my child.
20	498	– do things with and for my child that are good for my child's development.

The fact that items have highly stable calibrations (agreeability levels) regardless of the population that is asked to respond to the items is a very important attribute of well-constructed measurement scales. This stability means that items with similar calibrations are, for all intents and purposes, interchangeable. As an example, this is why the SAT is the "same" test each time it is administered, even though it contains different items each time. The score achieved on any particular version of the SAT is comparable to the score achieved on any other version. Thus, a state can change some of the items on the survey from year to year, and still have validly comparable IFS measures across successive years.

Third, a Rasch analysis condenses information from a person's responses to all the items in a scale into a single number. That number is the person's measure on the scale. Since the Rasch framework puts measures on the same metric as item calibrations, a person's measure on a scale can be meaningfully interpreted in terms of the items on the scale. A person with a higher measure is expressing more agreement with items, overall, than a person with a lower measure. When IFS measures from a representative sample of parents are aggregated, the average value represents a reliable and highly interpretable measure of the extent to which Early Intervention services have helped the family know their rights, effectively communicate their children's needs, and help their children develop and learn.

Fourth, a Rasch analysis yields an estimate of the reliability of both the calibration values (related to the items) and the measures (related to people's responses). Scientific approaches to measurement require that the amount of "error," or imprecision, in the system be estimated, so that interpretations based on the measures can take this into consideration.

For a more detailed explanation of these concepts, please refer to Bond and Fox (2001) and Wright and Masters (1982).

SECTION 6

Results Pertaining to the Psychometric Properties of the Impact On Families Scale (IFS)

6.1. Psychometric Properties of the IFS Measures

In assessing the quality of the person-level measures derived from the IFS, it is germane to consider the issues of reliability and validity. The reliability of the obtained IFS measures pertains to the extent to which a particular individual is expected to attain the same IFS measure if the IFS were to be administered to the individual multiple times. That is, reliability concerns the stability of the IFS measure[1] (Crocker & Algina, 1986; Lord, 1980; Traub, 1994); low reliability coincides with a low level of stability, and high reliability coincides with a high level of stability. Reliability can range from 0 (lack of any stability) to 1 (perfect stability). In contrast to reliability, the validity of the IFS measures concerns the extent to which they are actually representative of the intended trait (i.e., level of impact on family).[2] The validity of the IFS measures can be assessed using numerous approaches, several of which are described below.

Statistics used to express measurement reliability range from 0 (indicating lack of any stability) to 1 (indicating perfect stability). The reliability of the IFS measures for the Massachusetts sample was measured in the Rasch framework to be .91. An alternative approach to estimating the reliability of the IFS measures is to employ Cronbach's alpha, which makes no assumptions about the fit of the responses to any particular model (Cronbach's alpha is based on the simpler true score model, and is commonly used in the behavioral sciences as a model-free index of reliability). The value of Cronbach's alpha was .99, which is consistent with the value of .91 obtained from the Rasch analysis. These results

[1] A definition of reliability that is more theoretically accurate describes reliability as the extent to which a given respondent's measure is determined by random error versus his or her true level of the trait being measured; low reliability coincides with a high level of measurement error, and high reliability coincides with a high low level of measurement error (Crocker & Algina, 1986; Lord, 1980; Traub, 1994).

[2] This definition of validity is a simplification of the definition now endorsed by the technical measurement community. The contemporary definition of validity describes it as the extent to which evidence and theory support the interpretations of the scale measures entailed by the proposed use of the scale (AERA/APA/NCME, 1999; Osterlind, 2006). That is, the validity of the IFS measures is based on how much evidence we have that the measures support the intended purposes of the use of the measures (i.e., are the measures behaving as they are supposed to behave, and leading to the correct decisions about individuals).

suggest that the measures obtained from the IFS serve as stable measures of the underlying trait.

Support for the validity of the measures obtained by the IFS comes from several lines of evidence. First, items for the IFS were developed in consultation with multiple groups of individuals, including parents of children with disabilities, state directors of special education, state early intervention coordinators, district and program personnel, advocates, attorneys, and community representatives, with direct and extensive experience related to early intervention programs' facilitation of positive family outcomes. Subsequent review of the items by expert panels, researchers, and NCSEAM's Parent/Family Involvement Workgroup confirmed that the item content maps onto the intended content domain of the IFS. Second, dimensionality analysis (i.e., principal components analysis and factor analysis) indicates that the items of the IFS are all measuring one primary construct, which is likely the intended one (i.e., positive family outcomes achieved as a result of Early Intervention services). A third line of evidence is related to a characteristic of items known as discrimination, discussed in Section 6.2. The high discrimination indices of the IFS items (see Table 10) indicate that the items are providing useful information concerning the construct that is intended to be measured. All of these types of evidence support the claim that the measures obtained using the IFS are valid.

6.2. Psychometric Properties of the IFS Items

Table 10 gives the calibration of each item along with indices of the item's fit to the Rasch model. The column labeled "Item Calibration" provides the value of the location parameter of the item. The higher the value of the item calibration, the greater the overall positive impact of Early Intervention services on family outcomes. The "Infit" and "Outfit" columns provide two measures of how well the Rasch model fits the responses provided to each item. In general, values of 1.0 indicate very good fit. Values approaching 2, or less than 0.5, suggest poorer fit (Bond & Fox, 2001).

The rightmost column of the table presents an index of discrimination for each item, calculated as the corrected item-total correlation coefficient. The values in this column are all quite high (≥ 0.76), indicating that each item is discriminating well between respondents who

had more positive versus more negative perceptions of early intervention programs' facilitation of positive family outcomes.

Table 10. Calibration, Fit, and Discrimination of the IFS Items

Item #	Item Calibration	Infit	Outfit	Discrimination
Q1	678	1.92	2.17	0.76
Q2	656	1.51	1.60	0.79
Q3	559	0.88	0.90	0.81
Q4	609	1.12	1.05	0.82
Q5	640	1.12	1.10	0.84
Q6	539	0.93	0.97	0.80
Q7	559	0.85	0.94	0.82
Q8	608	1.29	1.53	0.82
Q9	577	0.93	0.97	0.84
Q10	584	0.85	0.90	0.84
Q11	540	0.90	0.95	0.84
Q12	565	0.63	0.62	0.85
Q13	553	0.71	0.68	0.84
Q14	534	0.76	0.78	0.83
Q15	559	0.74	0.71	0.83
Q16	562	0.72	0.70	0.84
Q17	556	0.67	0.63	0.85
Q18	546	0.78	0.86	0.85
Q19	539	0.90	0.94	0.84
Q20	498	0.78	0.78	0.81
Q21	516	0.87	1.03	0.83
Q22	498	0.86	0.97	0.82
Q23	508	0.84	0.98	0.82

While Items Q1 and Q2 ("Over the past year, Early Intervention services have helped me and/or my family participate in typical activities for children and families in my community." and "Over the past year, Early Intervention services have helped me and/or my family know about services in the community.") display a less than ideal level of fit, they nevertheless have a relatively strong discrimination index, which provide evidence that they are useful items. Therefore, these items appear to be measuring the intended construct relatively well, but are not a very good fit for the Rasch framework, which employs specific assumptions concerning the properties of the items. The poor fit of items #1 and #2 make them possible candidates for revision and/or replacement in future administrations of the SEPPS.

SECTION 7

Calibration Methodology for the IFS

The Rasch calibrations of the IFS were conducted using the Winsteps software program. All items were fit using the Rating Scale Model (Wright & Masters, 1982). The metric of the calibration was set by equating the items in relation to the calibrated values obtained by Dr. William Fisher, consultant to NCSEAM, for a large dataset of five states. The mean and logit scale of the current calibration were also set equal to those generated in the larger analysis on five states conducted by Dr. Fisher. These equating procedures were conducted so that the scale measures obtained in the current calibration have equivalent meanings to those of other states' data.

Based on the analysis of the current data and on the results of Dr. Fisher's combined multi-state analysis, it was decided to combine the response categories "very strongly disagree" and "strongly disagree" into a single category. The rationale for combining the two categories was based on two factors: (a) low response rates (i.e., < 5%) in these two categories making their corresponding threshold parameter estimates relatively unstable, and (b) the two category threshold estimates were not far enough apart to indicate that the two categories served to meaningfully distinguish between individuals having substantially different levels of the trait being measured. As a result, the final analysis was based on a five-category response structure for each item. The control file used in the current analysis is given in Appendix D. Selected output related to the Rasch analysis of the IFS is given in Appendix E.

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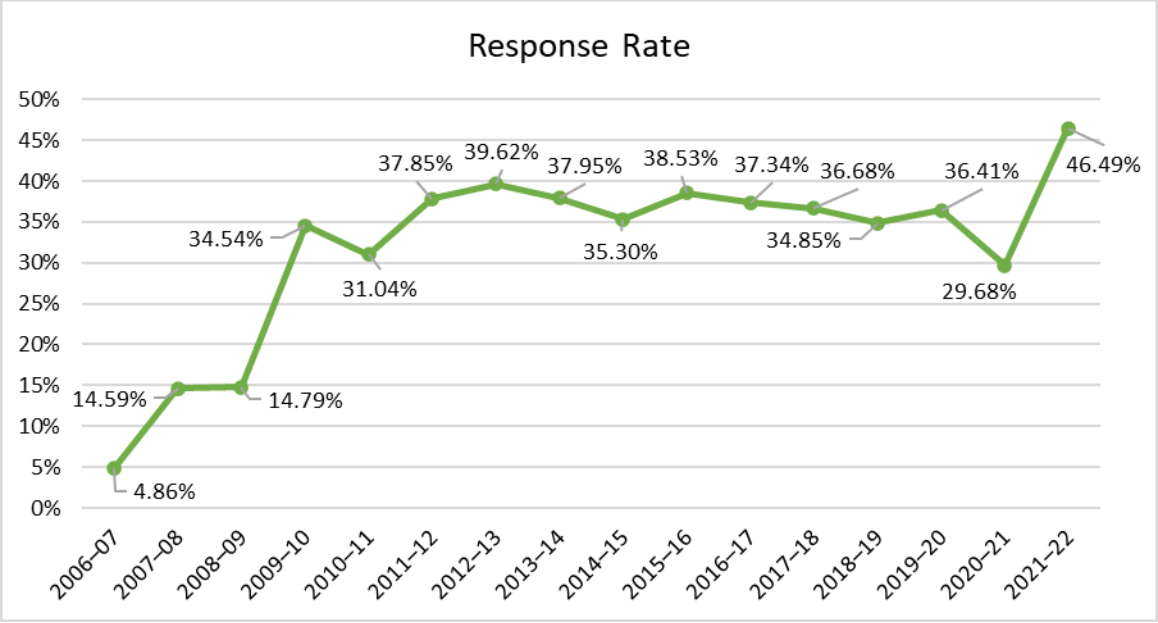
APPENDIX A: LONGITUDINAL FIGURES

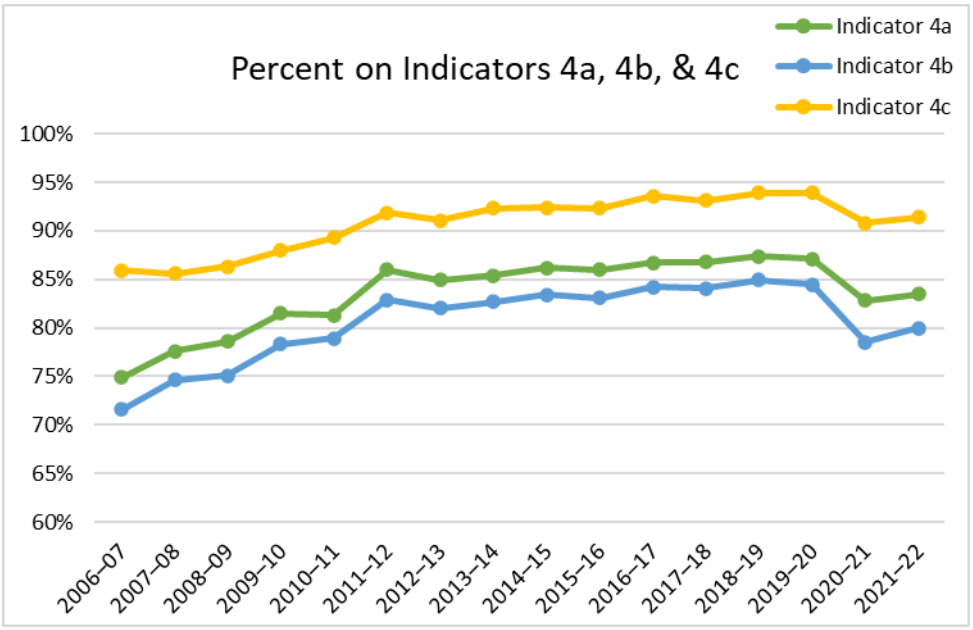
Response Rates 2006–2022

Fiscal Year	Surveys Distributed	Surveys Completed	Response Rate
2006–07	13,675	665	4.86%
2007–08	15,350	2,239	14.59%
2008–09	15,350	2,270	14.79%
2009–10	11,057	3,819	34.54%
2010–11	8,943	2,776	31.04%
2011–12	9,114	3,450	37.85%
2012–13	9,664	3,829	39.62%
2013–14	10,514	3,990	37.95%
2014–15	11,133	3,930	35.30%
2015–16	12,328	4,750	38.53%
2016–17	12,180	4,548	37.34%
2017–18	12,161	4,461	36.68%
2018–19	13,542	4,719	34.85%
2019–20	3,337	1,215	36.41%
2020–21	8,283	2,458	29.68%
2021–22	6,032	2,804	46.49%



Indicator 4 Percentages 2006–2022

Fiscal Year	Indicator 4a	Indicator 4b	Indicator 4c
2006–07	74.9%	71.6%	85.9%
2007–08	77.6%	74.6%	85.6%
2008–09	78.6%	75.1%	86.3%
2009–10	81.5%	78.3%	88.0%
2010–11	81.3%	78.9%	89.3%
2011–12	86.0%	82.9%	91.9%
2012–13	84.9%	82.0%	91.1%
2013–14	85.4%	82.7%	92.3%
2014–15	86.2%	83.4%	92.4%
2015–16	86.0%	83.1%	92.3%
2016–17	86.7%	84.2%	93.6%
2017–18	86.8%	84.1%	93.1%
2018–19	87.4%	84.9%	93.9%
2019–20	87.1%	84.5%	93.9%
2020–21	82.8%	78.5%	90.8%
2021–22	83.5%	80.0%	91.4%



APPENDIX B: SAMPLE SURVEY

Family Survey - Early Intervention

This is a survey for families receiving Early Intervention services. Your responses will help guide efforts to improve services and outcomes for children and families. For each statement below, please select one of the following response choices: very strongly disagree, strongly disagree, disagree, agree, strongly agree, very strongly agree. In responding to each statement, think about your experience and your family's experience with Early Intervention services over the past year. You may skip any item that you feel does not apply to your family.

Use pencil only. Fill in circle completely: Incorrect:

Impact of Early Intervention Services on Your Family

Over the past year, Early Intervention services have helped me and/or my family:

	Very Strongly Disagree	Strongly Disagree	Disagree	Agree	Strongly Agree	Very Strongly Agree
1. - participate in typical activities for children and families in my community.	○	○	○	○	○	○
2. - know about services in the community.	○	○	○	○	○	○
3. - figure out solutions to problems as they come up.	○	○	○	○	○	○
4. - know where to go for support to meet my child's needs.	○	○	○	○	○	○
5. - know where to go for support to meet my family's needs.	○	○	○	○	○	○
6. - get the services that my child and family need.	○	○	○	○	○	○
7. - feel more confident in my skills as a parent.	○	○	○	○	○	○
8. - help other children in my family (if there are other children) adjust to their brother's or sister's needs.	○	○	○	○	○	○
9. - make changes in family routines that will benefit my child with special needs.	○	○	○	○	○	○
10. - be more effective in managing my child's behavior.	○	○	○	○	○	○
11. - do activities that are good for my child even in times of stress.	○	○	○	○	○	○
12. - feel that I can get the services and supports that my child and family need.	○	○	○	○	○	○
13. - understand how the Early Intervention system works.	○	○	○	○	○	○

Please turn page over ⇨

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Impact of Early Intervention Services on Your Family (cont.)

Over the past year, Early Intervention services have helped me and/or my family:

	Very Strongly Disagree	Strongly Disagree	Disagree	Agree	Strongly Agree	Very Strongly Agree
14. - be able to evaluate how much progress my child is making.	○	○	○	○	○	○
15. - feel that my child will be accepted and welcomed in the community.	○	○	○	○	○	○
16. - feel that my family will be accepted and welcomed in the community.	○	○	○	○	○	○
17. - communicate more effectively with the people who work with my child and family.	○	○	○	○	○	○
18. - understand the roles of the people who work with my child and family.	○	○	○	○	○	○
19. - know about my child's and family's rights concerning Early Intervention services.	○	○	○	○	○	○
20. - do things with and for my child that are good for my child's development.	○	○	○	○	○	○
21. - understand my child's special needs.	○	○	○	○	○	○
22. - feel that my efforts are helping my child.	○	○	○	○	○	○
23. - be more hopeful about my child's future.	○	○	○	○	○	○

24. Health Insurance Information

- ○ Mass Health
- ○ Private Insurance (i.e., Blue Cross/Blue Shield, Tufts, Fallon)
- ○ None

25. Child's Age at Time of Survey Completion

- ○ Birth to 1 year
- ○ 1 - 2 years
- ○ 2 - 3 years
- ○ Over 3 years

26. Child's Age When First Referred to Early Intervention

- ○ Birth to 1 year
- ○ 1 - 2 years
- ○ 2 - 3 years

27. Child's Race / Ethnicity

- ○ White
- ○ Black or African-American
- ○ Hispanic or Latino
- ○ Asian or Pacific Islander
- ○ American Indian or Alaskan Native
- ○ Multi-racial

28. Did anyone help you fill out this survey?

- ○ Family member
- ○ EI staff
- ○ Other

--Thank you for your participation.--

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APPENDIX C: RESPONSE FREQUENCIES BY ITEM

Q1 - Over the past year, Early Intervention services have helped me and/or my family participate in typical activities for children and families in my community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	55	2.0	2.0	2.0
	Strongly Disagree	43	1.5	1.6	3.6
	Disagree	205	7.3	7.6	11.2
	Agree	954	34.0	35.2	46.3
	Strongly Agree	572	20.4	21.1	67.4
	Very Strongly Agree	885	31.6	32.6	100.0
	Total	2714	96.8	100.0	
Missing	System	90	3.2		
Total		2804	100.0		

Q2 - Over the past year, Early Intervention services have helped me and/or my family know about services in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	51	1.8	1.9	1.9
	Strongly Disagree	30	1.1	1.1	2.9
	Disagree	169	6.0	6.1	9.1
	Agree	943	33.6	34.3	43.4
	Strongly Agree	647	23.1	23.5	66.9
	Very Strongly Agree	911	32.5	33.1	100.0
	Total	2751	98.1	100.0	
Missing	System	53	1.9		
Total		2804	100.0		

Q3 - Over the past year, Early Intervention services have helped me and/or my family figure out solutions to problems as they come up.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	40	1.4	1.4	1.4
	Strongly Disagree	22	.8	.8	2.2
	Disagree	35	1.2	1.3	3.5
	Agree	604	21.5	21.7	25.2
	Strongly Agree	763	27.2	27.5	52.7
	Very Strongly Agree	1315	46.9	47.3	100.0
	Total	2779	99.1	100.0	
Missing	System	25	.9		
Total		2804	100.0		

Q4 - Over the past year, Early Intervention services have helped me and/or my family know where to go for support to meet my child's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	44	1.6	1.6	1.6
	Strongly Disagree	21	.7	.8	2.3
	Disagree	58	2.1	2.1	4.4
	Agree	683	24.4	24.6	29.1
	Strongly Agree	705	25.1	25.4	54.5
	Very Strongly Agree	1260	44.9	45.5	100.0
	Total	2771	98.8	100.0	
Missing	System	33	1.2		
Total		2804	100.0		

Q5 - Over the past year, Early Intervention services have helped me and/or my family know where to go for support to meet my family's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	46	1.6	1.7	1.7
	Strongly Disagree	20	.7	.7	2.4
	Disagree	99	3.5	3.6	6.0
	Agree	813	29.0	29.7	35.8
	Strongly Agree	671	23.9	24.5	60.3
	Very Strongly Agree	1086	38.7	39.7	100.0
	Total	2735	97.5	100.0	
Missing	System	69	2.5		
Total		2804	100.0		

Q6 - Over the past year, Early Intervention services have helped me and/or my family get the services that my child and family need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	47	1.7	1.7	1.7
	Strongly Disagree	17	.6	.6	2.3
	Disagree	50	1.8	1.8	4.1
	Agree	587	20.9	21.0	25.1
	Strongly Agree	732	26.1	26.2	51.3
	Very Strongly Agree	1359	48.5	48.7	100.0
	Total	2792	99.6	100.0	
Missing	System	12	.4		
Total		2804	100.0		

Q7 - Over the past year, Early Intervention services have helped me and/or my family feel more confident in my skills as a parent.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	37	1.3	1.3	1.3
	Strongly Disagree	15	.5	.5	1.9
	Disagree	60	2.1	2.2	4.0
	Agree	638	22.8	22.9	26.9
	Strongly Agree	757	27.0	27.2	54.1
	Very Strongly Agree	1278	45.6	45.9	100.0
	Total	2785	99.3	100.0	
Missing	System	19	.7		
Total		2804	100.0		

Q8 - Over the past year, Early Intervention services have helped me and/or my family help other children in my family (if there are other children) adjust to their brother's or sister's needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	1.4	1.6	1.6
	Strongly Disagree	22	.8	.9	2.5
	Disagree	163	5.8	6.7	9.2
	Agree	833	29.7	34.3	43.5
	Strongly Agree	525	18.7	21.6	65.1
	Very Strongly Agree	848	30.2	34.9	100.0
	Total	2429	86.6	100.0	
Missing	System	375	13.4		
Total		2804	100.0		

Q9 - Over the past year, Early Intervention services have helped me and/or my family make changes in family routines that will benefit my child with special needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	40	1.4	1.5	1.5
	Strongly Disagree	21	.7	.8	2.3
	Disagree	84	3.0	3.2	5.5
	Agree	811	28.9	30.6	36.0
	Strongly Agree	669	23.9	25.2	61.2
	Very Strongly Agree	1029	36.7	38.8	100.0
	Total	2654	94.7	100.0	
Missing	System	150	5.3		
Total		2804	100.0		

Q10 - Over the past year, Early Intervention services have helped me and/or my family be more effective in managing my child's behavior.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	35	1.2	1.3	1.3
	Strongly Disagree	27	1.0	1.0	2.3
	Disagree	78	2.8	2.9	5.1
	Agree	754	26.9	27.7	32.9
	Strongly Agree	750	26.7	27.6	60.4
	Very Strongly Agree	1077	38.4	39.6	100.0
	Total	2721	97.0	100.0	
Missing	System	83	3.0		
Total		2804	100.0		

Q11 - Over the past year, Early Intervention services have helped me and/or my family do activities that are good for my child even in times of stress.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	35	1.2	1.3	1.3
	Strongly Disagree	28	1.0	1.0	2.3
	Disagree	67	2.4	2.4	4.7
	Agree	729	26.0	26.5	31.2
	Strongly Agree	706	25.2	25.7	56.9
	Very Strongly Agree	1186	42.3	43.1	100.0
	Total	2751	98.1	100.0	
Missing	System	53	1.9		
Total		2804	100.0		

Q12 - Over the past year, Early Intervention services have helped me and/or my family feel that I can get the services and supports that my child and family need.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	46	1.6	1.7	1.7
	Strongly Disagree	17	.6	.6	2.3
	Disagree	53	1.9	1.9	4.2
	Agree	704	25.1	25.3	29.4
	Strongly Agree	702	25.0	25.2	54.6
	Very Strongly Agree	1265	45.1	45.4	100.0
	Total	2787	99.4	100.0	
Missing	System	17	.6		
Total		2804	100.0		

Q13 - Over the past year, Early Intervention services have helped me and/or my family understand how the Early Intervention system works.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	36	1.3	1.3	1.3
	Strongly Disagree	17	.6	.6	1.9
	Disagree	42	1.5	1.5	3.4
	Agree	697	24.9	25.0	28.4
	Strongly Agree	708	25.2	25.4	53.8
	Very Strongly Agree	1289	46.0	46.2	100.0
	Total	2789	99.5	100.0	
Missing	System	15	.5		
Total		2804	100.0		

Q14 - Over the past year, Early Intervention services have helped me and/or my family be able to evaluate how much progress my child is making.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	1.4	1.4	1.4
	Strongly Disagree	15	.5	.5	1.9
	Disagree	66	2.4	2.4	4.3
	Agree	614	21.9	22.0	26.3
	Strongly Agree	724	25.8	26.0	52.2
	Very Strongly Agree	1332	47.5	47.8	100.0
	Total	2789	99.5	100.0	
Missing	System	15	.5		
Total		2804	100.0		

Q15 - Over the past year, Early Intervention services have helped me and/or my family feel that my child will be accepted and welcomed in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	33	1.2	1.2	1.2
	Strongly Disagree	13	.5	.5	1.7
	Disagree	51	1.8	1.9	3.5
	Agree	713	25.4	26.0	29.5
	Strongly Agree	606	21.6	22.1	51.6
	Very Strongly Agree	1330	47.4	48.4	100.0
	Total	2746	97.9	100.0	
Missing	System	58	2.1		
Total		2804	100.0		

Q16 - Over the past year, Early Intervention services have helped me and/or my family feel that my family will be accepted and welcomed in the community.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	1.2	1.3	1.3
	Strongly Disagree	12	.4	.4	1.7
	Disagree	51	1.8	1.9	3.6
	Agree	742	26.5	27.3	30.9
	Strongly Agree	603	21.5	22.2	53.1
	Very Strongly Agree	1273	45.4	46.9	100.0
	Total	2715	96.8	100.0	
Missing	System	89	3.2		
Total		2804	100.0		

Q17 - Over the past year, Early Intervention services have helped me and/or my family communicate more effectively with people who work with my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	1.2	1.2	1.2
	Strongly Disagree	15	.5	.5	1.8
	Disagree	51	1.8	1.9	3.6
	Agree	719	25.6	26.2	29.9
	Strongly Agree	693	24.7	25.3	55.1
	Very Strongly Agree	1231	43.9	44.9	100.0
	Total	2743	97.8	100.0	
Missing	System	61	2.2		
Total		2804	100.0		

Q18 - Over the past year, Early Intervention services have helped me and/or my family understand the roles of the people who work with my child and family.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	29	1.0	1.0	1.0
	Strongly Disagree	17	.6	.6	1.7
	Disagree	69	2.5	2.5	4.2
	Agree	777	27.7	28.1	32.3
	Strongly Agree	701	25.0	25.4	57.7
	Very Strongly Agree	1170	41.7	42.3	100.0
	Total	2763	98.5	100.0	
Missing	System	41	1.5		
Total		2804	100.0		

Q19 - Over the past year, Early Intervention services have helped me and/or my family know about my child's and family's rights concerning Early Intervention services.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	38	1.4	1.4	1.4
	Strongly Disagree	15	.5	.5	1.9
	Disagree	60	2.1	2.2	4.1
	Agree	763	27.2	27.5	31.5
	Strongly Agree	663	23.6	23.9	55.4
	Very Strongly Agree	1239	44.2	44.6	100.0
	Total	2778	99.1	100.0	
Missing	System	26	.9		
Total		2804	100.0		

Q20 - Over the past year, Early Intervention services have helped me and/or my family do things with and for my child that are good for my child's development.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	32	1.1	1.1	1.1
	Strongly Disagree	16	.6	.6	1.7
	Disagree	20	.7	.7	2.4
	Agree	538	19.2	19.3	21.7
	Strongly Agree	688	24.5	24.6	46.3
	Very Strongly Agree	1500	53.5	53.7	100.0
	Total	2794	99.6	100.0	
Missing	System	10	.4		
Total		2804	100.0		

Q21 - Over the past year, Early Intervention services have helped me and/or my family understand my child's special needs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	1.2	1.2	1.2
	Strongly Disagree	12	.4	.4	1.7
	Disagree	44	1.6	1.6	3.3
	Agree	645	23.0	23.6	26.9
	Strongly Agree	675	24.1	24.7	51.6
	Very Strongly Agree	1321	47.1	48.4	100.0
	Total	2731	97.4	100.0	
Missing	System	73	2.6		
Total		2804	100.0		

Q22 - Over the past year, Early Intervention services have helped me and/or my family feel that my efforts are helping my child.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	31	1.1	1.1	1.1
	Strongly Disagree	15	.5	.5	1.7
	Disagree	29	1.0	1.0	2.7
	Agree	558	19.9	20.0	22.7
	Strongly Agree	737	26.3	26.5	49.2
	Very Strongly Agree	1414	50.4	50.8	100.0
	Total	2784	99.3	100.0	
Missing	System	20	.7		
Total		2804	100.0		

Q23 - Over the past year, Early Intervention services have helped me and/or my family be more hopeful about my child's future.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Strongly Disagree	34	1.2	1.2	1.2
	Strongly Disagree	12	.4	.4	1.7
	Disagree	38	1.4	1.4	3.0
	Agree	602	21.5	21.8	24.8
	Strongly Agree	666	23.8	24.1	48.9
	Very Strongly Agree	1415	50.5	51.1	100.0
	Total	2767	98.7	100.0	
Missing	System	37	1.3		
Total		2804	100.0		

Q24 - Health Insurance Information

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mass Health	1202	42.9	42.9	42.9
	Private Insurance	1568	55.9	55.9	98.8
	None	22	.8	.8	99.6
	Unknown	12	.4	.4	100.0
	Total	2804	100.0	100.0	

Q25 - Child's Age at Time of Survey Completion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Birth to 1 Yr	294	10.5	10.5	10.5
	1-2 Yrs	814	29.0	29.0	39.5
	2-3 Yrs	1659	59.2	59.2	98.7
	Over 3 Yrs	25	.9	.9	99.6
	Unknown	12	.4	.4	100.0
	Total	2804	100.0	100.0	

Q26 - Child's Age When First Referred to Early Intervention

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Birth to 1 Yr	1337	47.7	47.7	47.7
	1-2 Yrs	1264	45.1	45.1	92.8
	2-3 Yrs	181	6.5	6.5	99.2
	Unknown	22	.8	.8	100.0
	Total	2804	100.0	100.0	

Q27 - Child's Race / Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	White	1584	56.5	56.5	56.5
	Black or African-American	156	5.6	5.6	62.1
	Hispanic or Latino	519	18.5	18.5	80.6
	Asian or Pacific Islander	156	5.6	5.6	86.1
	American Indian or Alaskan Native	8	.3	.3	86.4
	Multi-racial	353	12.6	12.6	99.0
	Unknown	28	1.0	1.0	100.0
	Total	2804	100.0	100.0	

Q28 - Did anyone help you fill out this survey?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Family Member	468	16.7	16.7	16.7
	EI Staff	148	5.3	5.3	22.0
	Other	600	21.4	21.4	43.4
	Unknown	1588	56.6	56.6	100.0
	Total	2804	100.0	100.0	

APPENDIX D: WINSTEPS CONTROL FILE

```
&INST  ; THIS FILE MUST BE SAVED AS ASCII DOS TEXT BEFORE USE WITH WINSTEPS
Title="MA Impact on Families Scale: June 2022, parameters fixed to 2010 values"
ITEM1=2
DELIMITER=TAB ;        specifies a tab as a delimiter
;FITI=7
;FITP=7
ITLEN=15 ;max length of item label
LCONV=0.0001
RCONV=0.001
RESCOR=2
NEWSCR="112345"
DATA=C:\2022C\MA_C_2022_Data.txt; Name of data file
NI=23
XWIDE = 1
CODES = "123456"
IAFILE=*
1 677.5
2 656.0
3 559.2 ;fixed to 2010 value
4 608.8
5 639.8
6 539.0
7 559.3
8 608.2 ;fixed to 2010 value
9 576.8
10 583.5
11 540.4
12 564.5
13 552.9
14 534.4
15 559.1
16 562.2
17 555.9
18 545.5
19 538.9
20 497.8
21 516.1
22 498.1
23 507.5 ;fixed to 2010 value
*
SAFILE=*
  2 = -220.93
  3 = -147.88
  4 = 55.95
  5 = 128.99
*
NAME1 = 1; Column containing person name
NAMLEN = 15; Length of person name
PRCOMP=S
UDECIM=2
UMEAN=568.3
USCALE=58.91
CSV=S
HLINES=N
IFILE=ItemStats.sav ;Name of file containing item-level statistics
PFILE=PersonStats.sav ;Name of file containing person-level statistics
REALSE=Y
TABLES=111000000100110000000100011
&END
```

```
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
END NAMES
```

APPENDIX E: SELECTED WINSTEPS OUTPUT

```
TABLE 1.2 MA Impact on Families Scale: June 2022 ZOU460WS.TXTf Jun  4 2022  6:32s
INPUT: 2804 PERSON  23 ITEM  REPORTED: 2804 PERSON  23 ITEM  5 CATS WINSTEPS 4.4.7
-------------------------------------------------------------------------------

MEASURE    PERSON - MAP - ITEM
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  700           .#  +
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                .#  |  Q1
               .##  |
              .### M|T Q2
              .###  |  Q5
               .##  |
                .#  |S
  600           .##  +  Q4     Q8
                .#  |
                .#  |  Q10    Q9
                .#  |M Q12    Q15    Q16    Q3     Q7
                .#  |  Q13    Q17    Q18
                .# S|  Q11    Q14    Q19    Q6
              .###  |
                .#  |S Q21    Q23
  500           .#  +  Q20    Q22
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  200               +
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  100            .  +
              <less>|<freq>
 EACH "#" IS 44: EACH "." IS 1 TO 43
```

TABLE 3.1 MA Impact on Families Scale: June 2022 ZOU460WS.TXTf Jun 4 2022 6:32s
INPUT: 2804 PERSON 23 ITEM REPORTED: 2804 PERSON 23 ITEM 5 CATS WINSTEPS 4.4.7

SUMMARY OF 2279 MEASURED (NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	REAL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	87.7	22.4	654.55	25.71	.98	-.40	.98	-.38
SEM	.4	.0	2.47	.23	.01	.04	.02	.04
P.SD	18.1	1.7	117.83	11.10	.65	2.05	.78	1.96
S.SD	18.1	1.7	117.86	11.10	.65	2.05	.78	1.96
MAX.	114.0	23.0	897.30	91.03	6.73	9.91	9.90	9.91
MIN.	4.0	1.0	145.63	17.70	.00	-6.21	.00	-5.77

REAL RMSE 28.00 TRUE SD 114.46 SEPARATION 4.09 PERSON RELIABILITY .94
MODEL RMSE 25.24 TRUE SD 115.10 SEPARATION 4.56 PERSON RELIABILITY .95
S.E. OF PERSON MEAN = 2.47

MAXIMUM EXTREME SCORE: 493 PERSON 17.6%
MINIMUM EXTREME SCORE: 32 PERSON 1.1%

SUMMARY OF 2804 MEASURED (EXTREME AND NON-EXTREME) PERSON

	TOTAL SCORE	COUNT	MEASURE	REAL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	91.5	22.5	703.19	41.15				
SEM	.4	.0	3.28	.64				
P.SD	20.6	1.6	173.51	33.69				
S.SD	20.6	1.6	173.54	33.70				
MAX.	115.0	23.0	969.87	108.57				
MIN.	4.0	1.0	73.62	17.70				

REAL RMSE 53.18 TRUE SD 165.16 SEPARATION 3.11 PERSON RELIABILITY .91
MODEL RMSE 52.05 TRUE SD 165.52 SEPARATION 3.18 PERSON RELIABILITY .91
S.E. OF PERSON MEAN = 3.28

PERSON RAW SCORE-TO-MEASURE CORRELATION = .92
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .99 SEM = 2.04

SUMMARY OF 23 MEASURED (NON-EXTREME) ITEM

	TOTAL SCORE	COUNT	MEASURE	REAL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD
MEAN	11156.2	2742.1	564.41	2.18	.94	-3.31	.99	-1.28
SEM	129.5	15.9	9.85	.03	.06	1.30	.07	1.16
P.SD	607.5	74.6	46.20	.16	.29	6.10	.34	5.46
S.SD	621.2	76.2	47.24	.16	.29	6.24	.35	5.59
MAX.	11954.0	2794.0	677.50	2.73	1.92	9.90	2.17	9.90
MIN.	9225.0	2429.0	497.80	2.06	.63	-9.90	.62	-9.90

REAL RMSE 2.18 TRUE SD 46.15 SEPARATION 21.14 ITEM RELIABILITY 1.00
MODEL RMSE 2.10 TRUE SD 46.15 SEPARATION 21.94 ITEM RELIABILITY 1.00
S.E. OF ITEM MEAN = 9.85

ITEM RAW SCORE-TO-MEASURE CORRELATION = -.74
Global statistics: please see Table 44.
UMEAN=568.3000 USCALE=58.9100

TABLE 3.2 MA Impact on Families Scale: June 2022 ZOU460WS.TXTf Jun 4 2022 6:32s
INPUT: 2804 PERSON 23 ITEM REPORTED: 2804 PERSON 23 ITEM 5 CATS WINSTEPS 4.4.7

SUMMARY OF CATEGORY STRUCTURE. Model="R"

CATEGORY LABEL	SCORE	OBSERVED COUNT	%	OBSVD AVRGE	SAMPLE EXPECT	INFIT MNSQ	OUTFIT MNSQ	ANDRICH THRESHOLD	CATEGORY MEASURE	
1	1	1329	2	-209.3	-264	1.56	1.57	NONE	-295.89)	1
2	2	1642	3	-94.52	-134	1.09	1.20	-220.93A	-185.38	3
3	3	16421	26	-4.03	2.66	.96	1.16	-147.88A	-45.97	4
4	4	15663	25	95.18	82.16	.88	.78	55.95A	93.44	5
5	5	28013	44	210.32	221.8	.97	1.02	128.99A	(203.95)	6
MISSING		1424	2	58.80						

OBSERVED AVERAGE is mean of measures in category. It is not a parameter estimate.

CATEGORY LABEL	STRUCTURE MEASURE	S.E.	SCORE-TO-MEASURE AT CAT.	----ZONE----	PROBABLTY	50% CUM.	M->C	C->M	COHERENCE RMSR	ESTIM DISCR	OBSERVED-EXPECTED RESIDUAL	DIFFERENCE	
1	NONE		-295.89)	-INF -247.18			78%	43%	1.3281		-15.8%	-97.5	1
2	-220.93A	2.96	-185.38	-247.18 -127.29	-233.39		34%	33%	.9301	.82	-56.6%	-928.7	3
3	-147.88A	1.34	-45.97	-127.29 35.36	-137.31		72%	68%	.5857	1.15	3.8%	616.6	4
4	55.95A	.77	93.44	35.36 155.24	45.39		56%	65%	.5010	.97	12.4%	1942.9	5
5	128.99A	.77	(203.95)	155.24 +INF	141.46		80%	74%	.5508	1.01	-9.1%	-1533.3	6

M->C = Does Measure imply Category?
C->M = Does Category imply Measure?

Category Matrix : Confusion Matrix : Matching Matrix
Predicted Scored-Category Frequency

Obs Cat Freq	1	2	3	4	5	Total
1	987.82	139.77	152.91	35.11	13.39	1329.00
2	182.12	429.16	816.61	165.63	48.46	1642.00
3	233.29	1668.12	9176.49	3956.42	1386.70	16421.00
4	19.81	280.67	4442.63	5904.83	5015.06	15663.00
5	3.47	53.00	1215.72	3658.10	23082.71	28013.00
Total	1426.50	2570.72	15804.36	13720.09	29546.32	63068.00

CATEGORY PROBABILITIES: MODES - Andrich thresholds at intersections

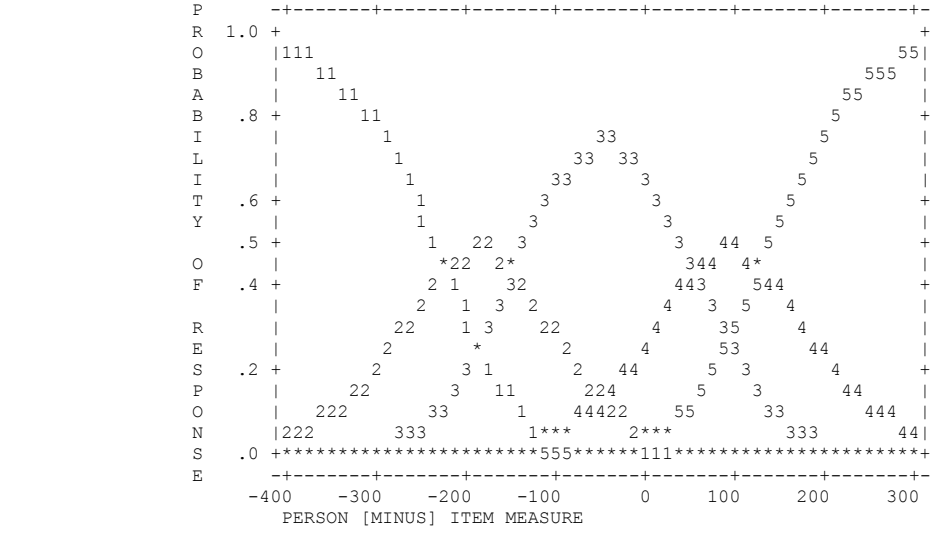

TABLE 10.1 MA Impact on Families Scale: June 202 ZOU460WS.TXT Jun 4 2022 6:32es
INPUT: 2804 PERSON 23 ITEM REPORTED: 2804 PERSON 23 ITEM 5 CATS WINSTEPS 4.4.7

PERSON: REAL SEP.: 3.11 REL.: .91 ... ITEM: REAL SEP.: 21.14 REL.: 1.00

ITEM STATISTICS: MISFIT ORDER

ENTRY NUMBER	TOTAL SCORE	TOTAL COUNT	MEASURE	REAL S.E.	INFIT MNSQ	INFIT ZSTD	OUTFIT MNSQ	OUTFIT ZSTD	PTMEASUR-AL CORR.	PTMEASUR-AL EXP.	EXACT MATCH OBS%	EXACT MATCH EXP%	DISPLACE	ITEM
1	10083	2714	677.50A	2.73	1.92	9.90	2.17	9.90	A .76	.86	39.2	57.7	-43.49	Q1
2	10391	2751	656.00A	2.43	1.51	9.90	1.60	9.90	B .79	.86	46.2	57.8	-34.79	Q2
8	9225	2429	608.20A	2.46	1.29	7.96	1.53	9.90	C .82	.84	61.9	60.0	13.27	Q8
4	11350	2771	608.80A	2.12	1.12	3.62	1.05	1.38	D .82	.84	61.7	59.8	-52.48	Q4
5	10817	2735	639.80A	2.11	1.12	3.70	1.10	2.79	E .84	.85	55.5	59.1	-53.49	Q5
21	11374	2731	516.10A	2.20	.87	-4.19	1.03	.51	F .83	.76	72.9	64.8	31.32	Q21
23	11667	2767	507.50A	2.21	.84	-5.35	.98	-.32	G .82	.76	73.3	65.3	28.25	Q23
6	11648	2792	539.00A	2.11	.93	-2.19	.97	-.56	H .80	.79	70.3	63.5	4.55	Q6
9	10483	2654	576.80A	2.10	.93	-2.25	.97	-.72	I .84	.82	69.6	61.5	14.11	Q9
22	11796	2784	498.10A	2.24	.86	-4.35	.97	-.39	J .82	.74	69.8	66.2	33.55	Q22
11	11138	2751	540.40A	2.13	.90	-3.31	.95	-1.11	K .84	.79	71.6	63.6	29.62	Q11
7	11504	2785	559.30A	2.07	.85	-5.22	.94	-1.30	L .82	.80	68.9	62.7	-7.56	Q7
19	11309	2778	538.90A	2.12	.90	-3.38	.94	-1.25	k .84	.79	72.0	63.6	26.51	Q19
3	11571	2779	559.20A	2.08	.88	-3.94	.90	-2.37	j .81	.80	68.1	62.7	-14.53	Q3
10	10865	2721	583.50A	2.06	.85	-5.07	.90	-2.42	i .84	.82	69.9	61.0	-1.62	Q10
18	11169	2763	545.50A	2.11	.78	-7.46	.86	-2.93	h .85	.79	73.7	63.4	25.49	Q18
14	11583	2789	534.40A	2.13	.76	-8.17	.78	-4.74	g .83	.78	73.1	63.8	13.65	Q14
20	11954	2794	497.80A	2.23	.78	-7.41	.78	-3.67	f .81	.75	70.0	66.1	24.00	Q20
15	11361	2746	559.10A	2.09	.74	-9.30	.71	-7.13	e .83	.80	71.9	62.8	-7.57	Q15
16	11151	2715	562.20A	2.10	.72	-9.86	.70	-7.52	d .84	.81	72.0	62.2	-3.66	Q16
13	11505	2789	552.90A	2.08	.71	-9.90	.68	-8.02	c .84	.80	73.0	63.0	.05	Q13
17	11235	2743	555.90A	2.10	.67	-9.90	.63	-9.41	b .85	.80	74.4	62.8	5.24	Q17
12	11414	2787	564.50A	2.06	.63	-9.90	.62	-9.90	a .85	.81	74.6	62.3	-5.42	Q12
MEAN	11156.2	2742.1	564.41	2.18	.94	-3.3	.99	-1.3			67.6	62.4	1.09	
P.SD	607.5	74.6	46.20	.16	.29	6.1	.34	5.5			8.9	2.3	25.86	

Data analysis conducted by Randall D. Penfield, Ph.D.
Report generated by Piedra Data Services.

For questions regarding this report, please contact Piedra Data Services at 305-254-9986.