**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 6,074 surveys were distributed to families in 59 Early Intervention Programs (EIPs). Overall, 2,804 completed surveys were returned, for a **return rate of 46.16%** (2,804/6,074). 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 6,074 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 46.16%. 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.

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| **Table 1. Race/Ethnicity Distribution** |
| **Race/Ethnicity** | ***N*** | **Percentage[[1]](#footnote-2)** |
| 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.

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| **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% |

**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.

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| **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**



**Frequency**

**IFS Measure**

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.

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## 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.

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| **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% |

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| **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.

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## 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).

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| **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% |

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## 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.

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| **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% |

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| **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% |

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## 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.

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| **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% |

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| **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:-- |

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## 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.

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| **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% |

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| **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[[2]](#footnote-3) (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).[[3]](#footnote-4) 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 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 | 6,074 | 2,804 | 46.16% |

**Indicator 4 Percentages 2006–2022**

|  |  |  |  |
| --- | --- | --- | --- |
| Fiscal Year | Indicator 4a | Indicator 4b | Indicator4c |
| 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

# MA DOH family survey page 1

# MA DOH family survey page 2

#

# 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=1110000001001100000000100011

&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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 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 REAL INFIT OUTFIT |

| SCORE COUNT MEASURE S.E. MNSQ ZSTD MNSQ 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 REAL INFIT OUTFIT |

| SCORE COUNT MEASURE S.E. MNSQ ZSTD MNSQ 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 REAL INFIT OUTFIT |

| SCORE COUNT MEASURE S.E. MNSQ ZSTD MNSQ 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 OBSERVED|OBSVD SAMPLE|INFIT OUTFIT|| ANDRICH |CATEGORY|

|LABEL SCORE COUNT %|AVRGE EXPECT| MNSQ MNSQ||THRESHOLD| 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 STRUCTURE | SCORE-TO-MEASURE | 50% CUM.| COHERENCE |ESTIM| OBSERVED-EXPECTED |

| LABEL MEASURE S.E. | AT CAT. ----ZONE----|PROBABLTY| M->C C->M RMSR |DISCR|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

P -+-------+-------+-------+-------+-------+-------+-------+-

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O |111 55|

B | 11 555 |

A | 11 55 |

B .8 + 11 5 +

I | 1 33 5 |

L | 1 33 33 5 |

I | 1 33 3 5 |

T .6 + 1 3 3 5 +

Y | 1 3 3 5 |

 .5 + 1 22 3 3 44 5 +

O | \*22 2\* 344 4\* |

F .4 + 2 1 32 443 544 +

 | 2 1 3 2 4 3 5 4 |

R | 22 1 3 22 4 35 4 |

E | 2 \* 2 4 53 44 |

S .2 + 2 3 1 2 44 5 3 4 +

P | 22 3 11 224 5 3 44 |

O | 222 33 1 44422 55 33 444 |

N |222 333 1\*\*\* 2\*\*\* 333 44|

S .0 +\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*555\*\*\*\*\*\*111\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*+

E -+-------+-------+-------+-------+-------+-------+-------+-

 -400 -300 -200 -100 0 100 200 300

 PERSON [MINUS] ITEM MEASURE

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 TOTAL TOTAL REAL | INFIT | OUTFIT |PTMEASUR-AL|EXACT MATCH| | |

|NUMBER SCORE COUNT MEASURE S.E. |MNSQ ZSTD|MNSQ ZSTD|CORR. EXP.| OBS% 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| |

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Report generated by Piedra Data Services.

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

1. Percentages have been rounded and may not sum to exactly 100%. [↑](#footnote-ref-2)
2. 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). [↑](#footnote-ref-3)
3. 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). [↑](#footnote-ref-4)