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October 13, 2017

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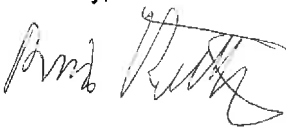
Dear Ms. Kauffman:

Attached are the reports, *Study to Measure the Delivery of Services in Accordance with the Individualized Education Programs of Students with Disabilities Year 14 (2016-2017)*, and the *Additional Exploratory Analysis Year 14*. The report notes that the District's performance remains consistent with last year's findings, with no progress made in meeting the duration target of Outcome 13. Although the District met the first two targets (evidence of one service – 96.7% without SLD and 96.8% with SLD, and frequency – 86.9%), it once again fell considerably short of the third (duration – 71.8%). These findings confirm that as currently constructed, the District will not meet Outcome 13.

This report is being released prior to the next Annual Report in order to move forward the efforts to negotiate an alternative measure for Outcome 13. The Parties are encouraged to find a resolution as soon as possible.

I am hopeful that this school year a new outcome will be established that is both rigorous and attainable while improving the District's service delivery system that addresses: systemic weaknesses impacting service delivery; mechanisms for identifying and addressing noncompliance; and, accountability.

Sincerely,



David Rostetter

C: Michelle King, Robert Myers, Catherine Blakemore, David Holmquist, Deneen Evans Cox, Brigitte Ammons



AMERICAN INSTITUTES FOR RESEARCH

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## **Study to Measure the Delivery of Services in Accordance with the Individualized Education Programs of Students with Disabilities: Year 14 (2016-17)**

**Submitted to:**

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333 S. Beaudry Avenue  
Los Angeles, CA 90017

**Submitted by:**

Jenifer Harr-Robins, Ph.D.  
American Institutes for Research

OCTOBER 2017

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## Introduction

AIR's report to the Office of the Independent Monitor (OIM) presents the results from the Year 14 (2016-17) study to measure whether the Los Angeles Unified School District (LAUSD) met the goals of Outcome #13 of the Modified Consent Decree (MCD). Established in 2003, the OIM is the oversight agency of LAUSD's special education program and is responsible for determining whether LAUSD meets compliance with the MCD. Outcome #13 of the MCD states that LAUSD must provide evidence that at least 93% of special education services required by students' Individualized Education Programs (IEPs) were delivered. In addition, 85% of the services must meet the frequency and duration specified in the IEPs.

The study addressed the following three questions:

- (1) Was there evidence of at least one incident of provision for each service specified in the student's IEP over an 8-week/2-month period?<sup>1</sup>
- (2) Were student services meeting the criterion specified in Question 1 (i.e., the subset of student services for which there was evidence of at least one incident of valid service provision) provided at the frequency (i.e., the number of times) stated on the IEP?
- (3) Were student services meeting the criterion specified in Question 1 provided for the duration (i.e., the amount of time) stated on the IEP?

For the first question, the outcome examines two student groups: all disabilities combined excluding Specific Learning Disability (SLD) and SLD individually.<sup>2</sup> The second and third questions examine all disabilities combined.

Using an electronic log system, providers in LAUSD document the delivery of special education services, including the date, duration, and status of each session, to individual students. This study compares the requirements recorded on the students' IEPs to information on these provider logs to address the above questions. To answer the first question, AIR estimated the percentage of services for which at least one valid session was documented on the submitted logs during an 8-week/2-month period between January and March 2017.<sup>3</sup> For the frequency and duration questions, AIR compared

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<sup>1</sup> An 8-week timeline was used for services occurring on a weekly basis. A full 2-month timeline was used for monthly services to ensure enough time to capture the provision of at least two service sessions.

<sup>2</sup> Starting with Year 2, the MCD required LAUSD to disaggregate the evidence of service delivery results for the population excluding SLD and for SLD only. Because students with SLD comprise the majority of the special education population, the OIM considered it important to consider this population separately.

<sup>3</sup> LAUSD's Office of Data and Accountability developed extensive rules for coding the log information, subject to approval by the OIM, to determine if a given service session was considered as valid, thereby constituting evidence of service provision.

the IEP requirements for services (for which there was at least one incident of valid service) to the actual frequency and duration shown on the logs over an 8-week/2-month period.<sup>4</sup>

As noted, this is the 14<sup>th</sup> year in which this study has been conducted. In the first year of study, AIR entered information from the sampled logs and IEPs into a database and analyzed the data in accordance with an initial set of coding rules. In Years 2-5, LAUSD's Office of Data and Accountability compared the IEP-log information by hand, using coding rules that were modified and supplemented by the Office of Data and Accountability in consultation with the OIM. Because the information needed to conduct the analyses were available in electronic form in Years 6-14, AIR created a computer program to analyze the data, which attempted to follow as closely as possible the rules used for the hand-coding process used in Year 5. Prior to Year 13, the coding rules provided credit for service sessions that did not occur for certain reasons (for example, the provider being absent due to illness within a given time period). However, because LAUSD changed the documentation for cancelled sessions that eliminated the description of the reasons for the cancellation, AIR was not able to implement some of the rules that provided credit in this and last years' analyses.

For this year's study (2016-17), the Office of Data and Accountability provided AIR with databases containing IEPs for 4,855 students in special education in the district and their corresponding provider log information, if available. The Office of Data and Accountability staff hand-coded approximately 185 service records because certain school calendars did not align with the track periods selected for the study or had additional holidays not captured by the computer program.<sup>5</sup> Using these databases and the hand-coded records, the final results for the evidence of service analysis included 7,186 services for 4,267 of the students in this sample.<sup>6</sup>

The results of the current study are described in Section I of this report. To further understand service patterns and help identify areas for possible improvement, AIR also conducted exploratory analyses of selected service records that did not meet the frequency or duration requirements (Section II).

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<sup>4</sup> The specific 8-week/2-month period used in this study for each student was determined by the student's school track calendar. Services reported as weekly in the IEP were analyzed across eight weeks, while two full months were used for monthly services.

<sup>5</sup> Hand coding was necessary for charter schools, because they set their own calendars and do not consistently have the same standard holidays as non-charter schools.

<sup>6</sup> The sample of students included in the service estimates (n = 4,267) is substantially smaller than the sample that LAUSD's Office of Data and Accountability provided to AIR (n = 4,855). In accordance with the coding rules, 588 students were dropped due to reasons such as the student leaving the district, exiting special education, attending a non-public school, or students whose only service was yearly, or whose only service ended before or during the selected track period, started after the track period, or changed during the track period.

## Section I: MCD Study Results

### ***Was there evidence of at least one incident of provision for each service specified in the student's IEP over an 8-week/2-month period?***

Based on provider logs for the first group of students included in this analysis (i.e., those with categories of disability other than SLD), we found evidence that 97% of the special education services required by IEPs district-wide during the 2016-17 school year were provided at least once during an 8-week/2-month period of analysis.<sup>7</sup> This population estimate represents services for students in all disability categories (except SLD) district-wide whose IEPs required at least one special education service.<sup>8</sup> For the sample of students with SLD whose IEPs required at least one special education service, we found that this population of students also had 97% of their required services provided at least once during an 8-week/2-month period. Figure 1 illustrates the percentages of services for which there was evidence of at least one instance of provision by disability category. Figure 2 shows this information by service category across all disability categories combined.

Because these figures are based on a sample of students and not the entire population, we estimated confidence intervals at the 95% level to specify the precision of the service estimates presented above. For the first group of students specified for this outcome (all special education students excluding SLD), these analyses show that with 95% confidence the true service delivery rate for this sub-population falls between 96.1% and 97.3%. For students with SLD, for which the MCD outcome goal is also specified at 93%, we can predict with 95% confidence that the true estimate of provision falls between 95.7% and 97.9%.<sup>9</sup> Therefore, the confidence intervals for both groups of students are above the MCD outcome goal of 93%.

Across the individual disability categories, the estimate of service delivery ranged from 95% for students with Speech/Language Impairment (SLI) to 99% for students who are Deaf/Hard of Hearing. By service category, the percentages varied from 93% for Non-Public Agency (NPA) services to 99% for Adapted Physical Education services.

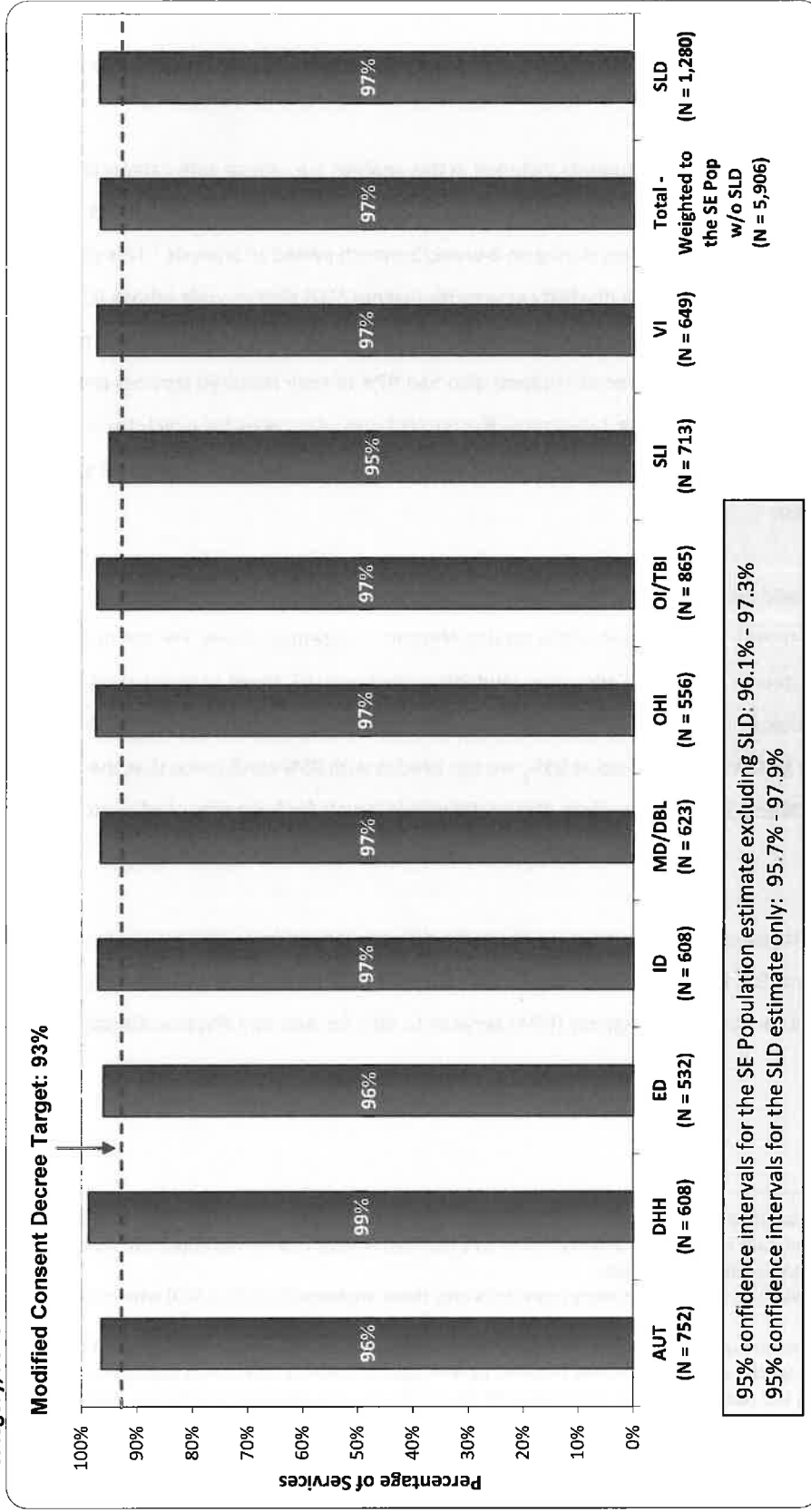
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<sup>7</sup> This is a population estimate based on the probability weights for each disability category, excluding SLD. Please see Appendix A for more details. The population estimate represents students whose IEPs required at least one special education service according to data provided by the Information Technology Division.

<sup>8</sup> The population estimate for evidence of service delivery represents only those students (excluding SLD) who had a service code in the data.

<sup>9</sup> OIM also requested separate service delivery analyses for charter schools based on the students in the sample. For charter schools, we found evidence that 97% of special education services required by IEPs were provided at least once during an 8-week/2-month period, excluding students with SLD (with confidence intervals of 95.9% and 98.5%). For students with SLD in charter schools, we found evidence that 97% of their required services were provided at least once (with confidence intervals of 94.6% and 99.0%).

**Figure 1. Percentage of services for which there was evidence of at least one incident of service provision during an 8-week/2-month period, by disability category, 2016-17**

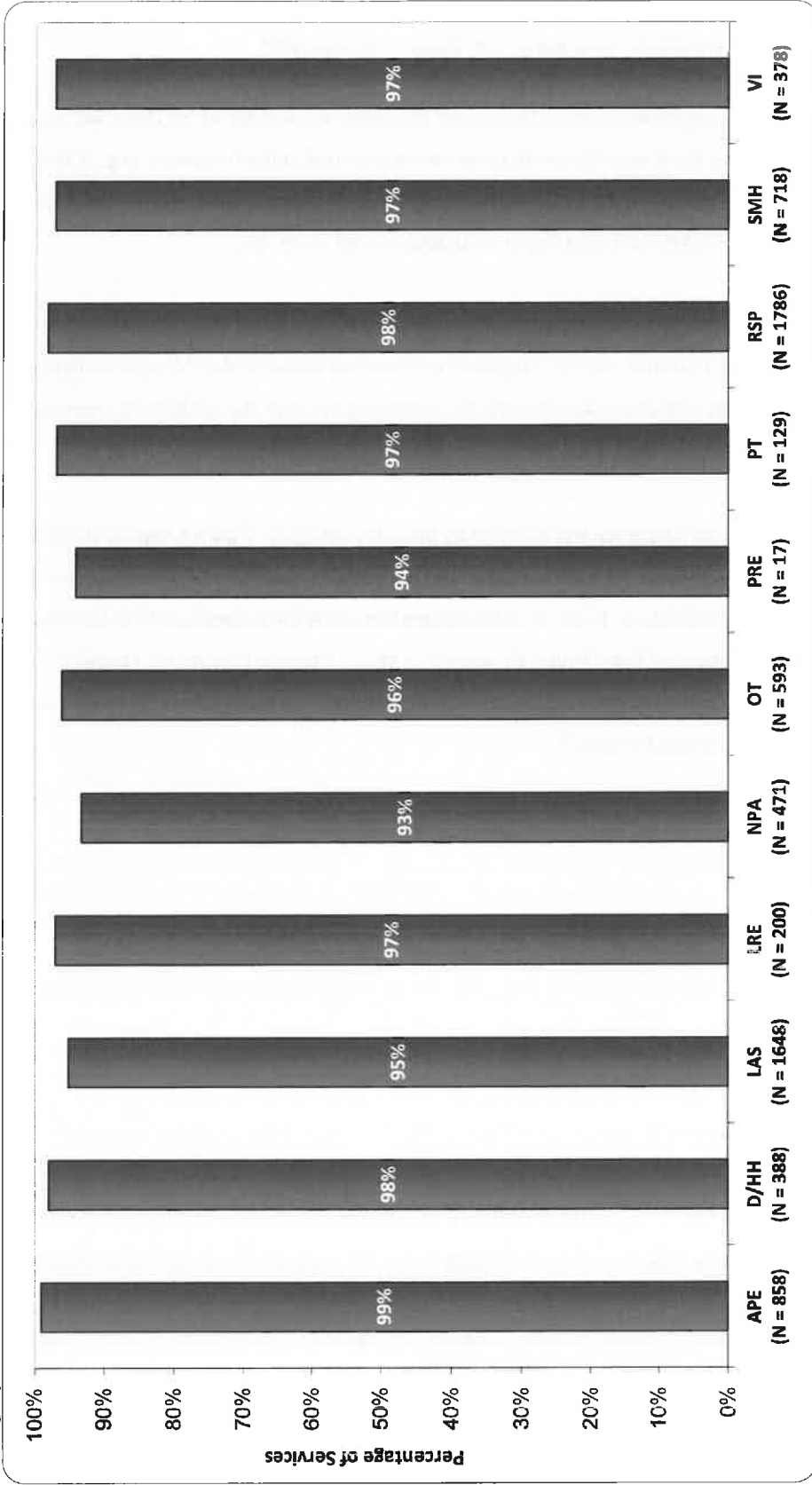


Note 1: The population estimate represents the population of students in special education district-wide (excluding students with Specific Learning Disabilities) whose IEPs required at least one special education service as reported in data provided by the Information Technology Division.

Note 2: The numbers (N) shown underneath the disability categories represent the total number of services analyzed for that category. For example, we found evidence of service provision for 96% of the 752 services required for the sampled students with Autism.

Abbreviations: AUT (Autism); DHH (Deaf/Hard of Hearing); ED (Emotional Disturbance); ID (Intellectual Disability); MD/DBL (Multiple Disabilities/Deaf-Blindness); OHI (Other Health Impairment); OI/TBI (Orthopedic Impairment/Traumatic Brain Injury); SE (Special Education); SLD (Specific Learning Disability); SLI (Speech/Language Impairment); VI (Visual Impairment).

**Figure 2. Percentage of services for which there was evidence of at least one incident of service provision during an 8-week/2-month period, by service category, 2016-17**



Note 1: These percentages include all disability categories receiving those particular services, including students with Specific Learning Disability.

Note 2: The numbers (N) shown underneath the service categories represent the total number of services analyzed for that category. For example, we found evidence of service provision for 99% of the 858 Adapted Physical Education (APE) services required for the sampled students.

Abbreviations: APE (Adapted Physical Education); D/HH (Deaf/Hard of Hearing Itinerant Service); LAS (Language & Speech); LRE (Least Restrictive Environment Itinerant Service); NPA (Non-Public Agency); OT (Occupational Therapy); PRE (Pre-School); PT (Physical Therapy); RSP (Resource Specialist); SMH (School Mental Health); VI (Visual Impairment Itinerant Service).



### ***Were services provided at the frequency and duration required by the IEP?***

A second component of this study examined whether the special education services for which there was evidence of at least one incident of provision over the 8-week/2-month period were provided at the frequency (e.g., 2 times a week) and the duration (e.g., 30 minutes per week) documented in the IEPs. As mentioned above, the MCD outcome goal specifies that 85% of services must meet the frequency and duration stated in the IEPs.

For frequency and duration, the outcome examined all disabilities combined, including SLD. Of services with evidence of service (Question 1), AIR estimates that 87% met the frequency requirement stated in the IEP, with confidence intervals of 85.8% and 87.9%.<sup>10</sup> For duration, 72% of services met the IEP specifications, with the confidence intervals ranging from 70.4% to 73.2%, well below the outcome goal.<sup>11</sup>

Figure 3 presents this information on frequency and duration by disability category. Figure 4 depicts these data by service type. By disability category, estimates for meeting the IEP frequency ranged from 78% for students with SLI to 91% for students with Emotional Disturbance. Duration rates ranged from 67% for students with SLI to 79% for students with Orthopedic Impairment or Traumatic Brain Injury. By service category, frequency estimates ranged from 76% for Occupational Therapy to 95% for Least Restrictive Environment (LRE) services. Duration estimates ranged from 47% for NPA to 90% for LRE and Physical Therapy services.<sup>12</sup>

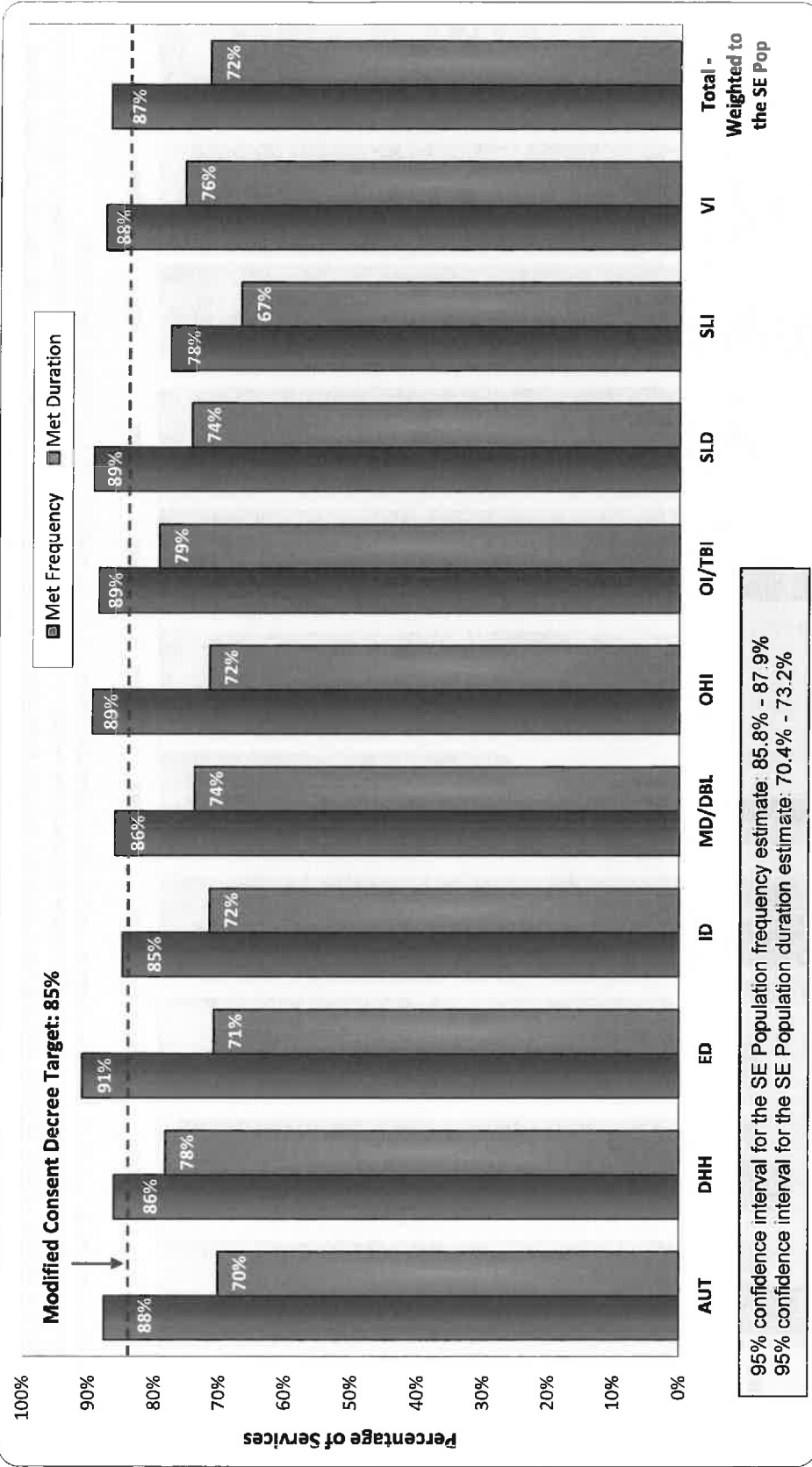
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<sup>10</sup> Note that approximately 70% of services other than RSP in the sample had frequencies of 1-5 or 1-10 in the IEPs. In determining the required frequency for the study period, the coding rules used the lowest number in the ranges. This means that services with frequencies of 1-5 or 1-10 would need only to be provided once during the specified interval (e.g., weekly) in order to meet the frequency.

<sup>11</sup> The frequency and duration population estimates represent students whose IEPs required at least one special education service, according to the data provided by the Information Technology Division, and includes students with SLD. OIM also requested separate service delivery analyses for charter schools, based on students in the sample. For charter schools, we found that 87% of services for which we received logs met the frequency requirements (with confidence intervals of 84.7% and 89.3%), while 72% met the IEP specifications for duration (with confidence intervals of 69.4% and 75.5%).

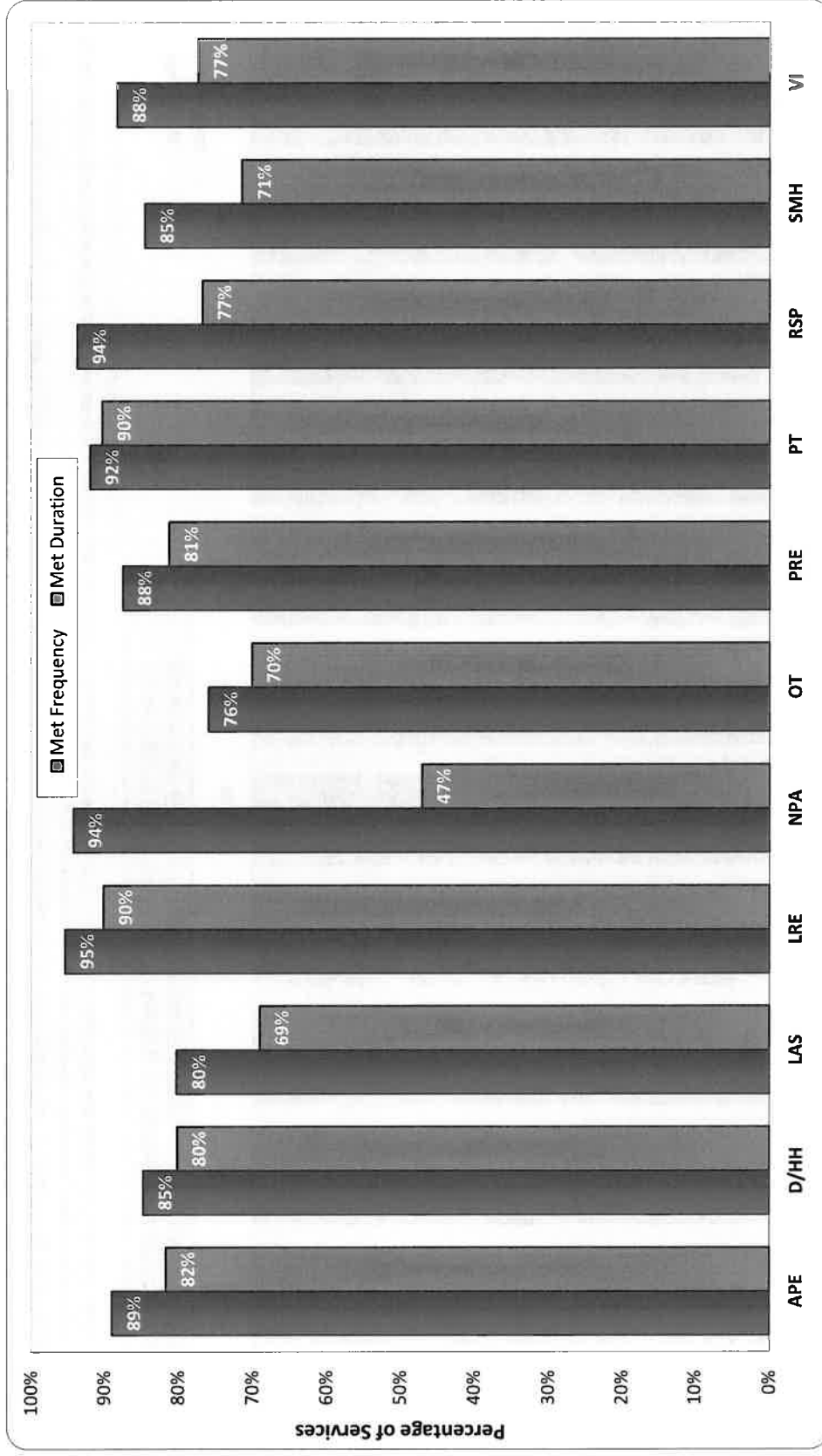
<sup>12</sup> NPA services generally have larger duration amounts specified in the IEPs in relation to other services. Half of the sampled NPA services had specified duration amounts of 1,800 or more minutes per week.

Figure 3. Percentage of services that met frequency/duration as specified by the IEPs during an 8-week/2-month period, by disability category, 2016-17



Note: The population estimate represents the population of students in special education district-wide whose IEPs required at least one special education service, according to data provided by the Information Technology Division, and includes students with Specific Learning Disability. Please see Appendix B for the number of service observations included in the frequency and duration analyses. Abbreviations: AUT (Autism); DHH (Deaf/Hard of Hearing); ED (Emotional Disturbance); ID (Intellectual Disability); MD/DBL (Multiple Disabilities/Deaf-Blindness); OHI (Other Health Impairment); OI/TBI (Orthopedic Impairment/Traumatic Brain Injury); SE (Special Education); SLD (Specific Learning Disability); SLI (Speech/Language Impairment); VI (Visual Impairment).

Figure 4. Percentage of services that met frequency/duration as specified by the IEPs during an 8-week/2-month period, by service category, 2016-17



Note: These percentages include all disability categories receiving those particular services, including students with Specific Learning Disability. Please see Appendix B for the number of service observations included in the frequency and duration analyses. Abbreviations: APE (Adapted Physical Education); D/HH (Deaf/Hard of Hearing Itinerant Service); LAS (Language & Speech); LRE (Least Restrictive Environment Itinerant Service); NPA (Non-Public Agency); OT (Occupational Therapy); PRE (Pre-School); PT (Physical Therapy); RSP (Resource Specialist); SMH (School Mental Health); VI (Visual Impairment Itinerant Service).

## Section II: Exploratory Analyses of Records that Missed Frequency and Duration

There has been a pattern of LAUSD not meeting the frequency outcome set by the MCD in previous years, and in all 13 years of the study, LAUSD has not met the duration outcome. To help inform and improve future service delivery efforts, the OIM was interested in better understanding services that missed the IEP frequency and duration requirements.

Among the 6,832 service records that had evidence of at least one incident of service and for which AIR analyzed for frequency in Year 14, 5,940 met the frequency requirements while 892 did not.<sup>13</sup> Table 1 shows the percentage of services that missed the required frequency by only one session, which varied from 22% for Resource Specialist Program (RSP) services to 70% for Deaf/Hard of Hearing and Physical Therapy services. In other words, 78% of the RSP services that missed frequency missed the requirement by more than one session. Overall, nearly half of all services that missed the required frequency (438 of 892) did so by *more than one session*.

For the duration analysis, 4,992 service records met the IEP duration requirements and 1,797 did not. As shown in Table 1, the percentage of services that missed the required duration for only one session ranged from 17% for RSP to 67% for Physical Therapy services.<sup>14</sup> Among services that did not meet duration, 60% (1,073 of 1,797) missed the required duration by *more than one session*.

To understand the impact of missing the required frequency and duration by only one session, AIR re-calculated the population estimates assuming that an additional session had been provided. If an additional session had been provided for services that missed the required frequency or duration, the population estimate would have improved from 87% to 93% for frequency and from 72% to 82% for duration.

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<sup>13</sup> The numbers in this section differ from the student sample size reported earlier because these numbers are the count of services, and not students. A single student could have multiple services.

<sup>14</sup> For each service observation, AIR estimated the most common duration amount per session across the 8-week/2-month period to determine if a service missed the IEP duration requirement by a single session.

**Table 1. Number and percentage of services that missed frequency and duration by one session, by service category, 2016-17**

Service category	Total N that missed frequency	N that missed frequency by one session	% of services that missed frequency by one session	Total N that missed duration	N that missed duration by one session <sup>1</sup>	% of services that missed duration by one session
Adapted Physical Education	93	55	59%	154	75	49%
Deaf/Hard of Hearing	57	40	70%	74	48	65%
Language and Speech	303	170	56%	472	232	49%
Least Restrictive Environment	*	*	*	19	12	63%
Non-Public Agency	25	6	24%	227	58	26%
Occupational Therapy	137	69	50%	170	84	49%
Physical Therapy	10	7	70%	12	8	67%
Pre-School	*	*	*	*	*	*
Resource Specialist Program	108	24	22%	390	66	17%
School Mental Health	106	50	47%	195	93	48%
Visual Impairment	42	24	57%	81	46	57%
<b>Total<sup>2</sup></b>	<b>892</b>	<b>454</b>	<b>51%</b>	<b>1,797</b>	<b>724</b>	<b>40%</b>
<b>N and % of services that missed by more than one session</b>		<b>438</b>	<b>49%</b>		<b>1,073</b>	<b>60%</b>

<sup>1</sup> To determine the duration amount of the missing sessions, the analysis used the most frequent duration amount listed across all sessions on the log for that particular service, for each student. The analysis then added that duration amount to the total provided duration amount to estimate the number of services that met the duration requirement after this addition. For example, 75 APE services newly met the duration requirement after adding the minutes of a single session to the total provided duration amount.

<sup>2</sup> The total row includes Least Restrictive Environment and Pre-school services; individual information for these services was suppressed due to the low number of observations.

\* Suppressed due to low number of observations.

Table 2 provides more detail on the degree by which services missed the required frequency. For this examination, AIR focused on the most common frequencies across an 8-week/2-month study period: 8 times (n = 597 records) and 16 times (n = 93).<sup>15</sup> Please note that the percentages in Table 2 are based on the number of services that did not meet the IEP requirements for frequency, not the entire number of services analyzed. Of those that missed frequency, half (50.4%) of once weekly services (i.e., 8 times across 8 weeks) and over a quarter (26.9%) of twice weekly services (i.e., 16 times across 8 weeks) missed the required frequency by one session. However, a sizeable percentage – 18.6% of once weekly services and 25.8% of twice weekly services – was provided at *half or less* of the required frequency.

<sup>15</sup> A frequency of two across two months was the second most common among services that missed IEP requirements for frequency (100 of 892); all of those records missed the required amount by one session.

**Table 2. Distribution of frequency provided for services that missed required frequency of 8 and 16 times across 8-week/2-month period, 2016-17**

Services that required 8 sessions across 8-week/2-month period and did not meet frequency			Services that required 16 sessions across 8-week/2-month period and did not meet frequency		
N of sessions provided	N of services	% of services	N of sessions provided	N of services	% of services
1	16	2.7%	1	1	1.1%
2	13	2.2%	2		0.0%
3	33	5.5%	3		0.0%
4	49	8.2%	4		0.0%
5	59	9.9%	5	4	4.3%
6	126	21.1%	6	6	6.5%
7	301	50.4%	7	3	3.2%
			8	10	10.8%
			9	6	6.5%
			10	7	7.5%
			11	3	3.2%
			12	8	8.6%
			13	10	10.8%
			14	10	10.8%
			15	25	26.9%
<b>Total</b>	<b>597</b>	<b>100%</b>	<b>Total</b>	<b>93</b>	<b>100%</b>

Similar patterns were found with the services missing the required duration. Table 3 presents the results for the two most commonly required duration amounts across an 8-week/2-month period among the 1,797 service records that did not meet duration: 240 minutes (n = 479 records) and 480 minutes (n = 308 records). The percentages in Table 3 reflect the percentages of services that did not meet the required duration. Half (50.3%) of services that missed the required duration of 240 minutes and 28.3% of services that missed the required duration of 480 minutes were provided within 30 minutes of the requirement. However, 15.2% of services requiring 240 minutes and 32.1% of services requiring 480 minutes across eight weeks were under the required amount by two or more hours.

**Table 3. Distribution of duration provided for services that missed required duration of 240 and 480 minutes across 8-week/2-month period, 2016-17**

<b>For services requiring 240 minutes across 8-week/2-month period</b>			
<b>Minutes provided:</b>	<b>Under by:</b>	<b>N of services</b>	<b>% of services</b>
211 - 239	29 minutes or less	62	12.9%
210	30 minutes	179	37.4%
181 - 209	31 - 59 minutes	31	6.5%
180	60 minutes	64	13.4%
151 - 179	61 - 89 minutes	22	4.6%
150	90 minutes	36	7.5%
121 - 149	91 - 119 minutes	12	2.5%
120	120 minutes	27	5.6%
Less than 120	121 minutes or more	46	9.6%
<b>Total</b>		<b>479</b>	<b>100%</b>
<b>For services requiring 480 minutes across 8-week/2-month period</b>			
<b>Minutes provided:</b>	<b>Under by:</b>	<b>N of services</b>	<b>% of services</b>
451 - 479	29 minutes or less	36	11.7%
450	30 minutes	51	16.6%
421 - 449	31 - 59 minutes	20	6.5%
420	60 minutes	62	20.1%
419 - 391	61 - 89 minutes	13	4.2%
390	90 minutes	16	5.2%
361 - 389	91 - 119 minutes	11	3.6%
360	120 minutes	28	9.1%
Less than 360	121 minutes or more	71	23.1%
<b>Total</b>		<b>308</b>	<b>100%</b>

## Summary

In Year 14, the results show that LAUSD met the incident of service outcome of 93% with the provision of 97% of the services specified in the IEPs at least once during an 8-week/2-month period (and 97% for SLD only). The District also met the frequency target of 85%. With 72% of services meeting the required duration in Year 14, the District continues to fall short of the duration target of 85%. While additional analyses show many records are missing frequency and duration by the equivalent of one service session, they also showed that more than half of the services fell short of the IEP requirements by a larger margin.

## Appendix A: Population Estimates and Statistical Confidence Intervals

### *Calculating Population Estimates*

To derive estimates representative of the population of students in special education in the Los Angeles Unified School District (LAUSD), AIR assigned a weight to the evidence of service delivery, frequency, and duration estimates for each disability category.<sup>16</sup> Table A-1 shows the population (Column A) and analytic sample size (Column B) of each disability category excluding Specific Learning Disability (SLD) for the evidence of service delivery analysis. The analytic sample is the number of students included in the estimates for “evidence of service” ( $n = 3,267$ , excluding SLD) – i.e., students for whom we expected a log during the study period. Column C shows the probability that each student with a particular disability had of being sampled. To calculate this probability, we divided the analytic sample size by the population size for each disability category. In the case of students with Intellectual Disability, for instance, each student had an 8.8% probability (Column C (i.e.,  $344 / 3,898$ )) of being included in the analytic sample.

Column D presents the *probability weight*, which we calculated by dividing one by the probability of being included in the analytic sample. This weight reflects the number of students with the same disability category in the overall population represented by each student in the analytic sample. For example, each student with Intellectual Disability in the analytic sample represented approximately 11.3 students with this disability in the population. We then applied the weights to the individual percentages by disability category to derive an overall population estimate of 95%. Because SLD was examined separately for evidence of service delivery, we did not include it in generating the weighted population estimate for that analysis. We conducted similar weighting exercises to estimate population estimates for frequency and duration, which included all disability categories.

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<sup>16</sup> The population in this study is comprised of students in special education whose IEPs required at least one special education service and excluded students who did not have a disability code and students who attended non-public schools, who graduated or left LAUSD, or who were not three years old by September 30, 2016.



**TABLE A-1**

**Probability and weights for evidence of service delivery population estimates (excluding SLD)**

Disability category	Population <sup>1</sup>	Analytic Sample	Probability	Weight
	A	B	C	D
Autism	10,999	353	0.0321	31.2
Deaf/Hard of Hearing	1,307	327	0.2502	4.0
Emotional Disturbance	770	337	0.4377	2.3
Intellectual Disability	3,898	344	0.0883	11.3
Multiple Disabilities/Deaf-Blindness	1,151	275	0.2389	4.2
Other Health Impairment	8,484	354	0.0417	24.0
Orthopedic Impairment/ Traumatic Brain Injury	758	349	0.4604	2.2
Speech & Language Impairment	8,880	612	0.0689	14.5
Visual Impairment	352	316	0.8977	1.1
<b>Total</b>	<b>36,599</b>	<b>3,267</b>		

<sup>1</sup> The population in this study consists of students who appeared in data provided by the Information Technology Division as having a disability category and as receiving at least one special education service. Students with SLD are excluded from the weights for the evidence of service delivery analysis since they are examined separately.

**Statistical Confidence Intervals**

The estimated rates of service delivery, frequency, and duration discussed in this report are point estimates of the population rates. These are the best single estimates for summarizing the information contained in the sample. It is also possible to generate intervals around these point estimates. These intervals reflect the probability of containing the true population measure (e.g., the service delivery rate for the full population of students with disabilities in LAUSD). Intervals at the 95% confidence level mean that there is a 95% probability that the true population measure falls between the lower and upper interval.

In order to generate confidence intervals, it is necessary to know the statistical distribution of the variable under analysis. In the case of this study, the unit of analysis is a dichotomous variable. This means that the variable analyzed only takes two possible values (e.g., yes or no), indicating whether a given service was provided or not. The distribution of such dichotomous variables is called a *Bernoulli distribution*. At a level of 95%, the confidence intervals for these distributions are defined as:

$$\left[ p - 1.96 \frac{\sqrt{p(1-p)}}{\sqrt{n}}, p + 1.96 \frac{\sqrt{p(1-p)}}{\sqrt{n}} \right]$$

(*p* represents the proportion of cases estimated). This means, that if 100 samples are drawn from the population of students with disabilities in LAUSD, in 95 of the cases, the true population rate will be contained in these confidence intervals. Note that these intervals use the Central Limit Theorem (CLT). CLT holds that the sampling distribution of the mean will approximate a normal distribution in large samples. This allows us to construct confidence intervals without knowing the specific distribution of the variable under analysis in

LAUSD, such as the probability of receiving services. As with any inference testing, as the sample size increases, the accuracy of the estimates improve and confidence intervals get smaller. Conversely, the smaller the sample size, the larger the confidence intervals must be to maintain the 95% confidence level. Table A-2 presents the confidence intervals for individual disability categories and the overall population estimates.

**TABLE A-2**

**Statistical confidence intervals by disability category, 95% confidence level, 2016-17**

Disability category	% of Services with Evidence of Log		% of Services that Met Frequency		% of Services that Met Duration		% of Services that Met Upper Limit		% of Services that Met Lower Limit	
	96.4%	98.4%	87.7%	84.2%	91.2%	84.2%	91.2%	84.2%	91.2%	84.2%
Autism	96.4%	98.4%	87.7%	84.2%	91.2%	84.2%	91.2%	84.2%	91.2%	84.2%
Deaf/Hard of Hearing	98.7%	99.9%	86.2%	82.4%	89.9%	82.4%	89.9%	82.4%	89.9%	82.4%
Emotional Disturbance	96.1%	98.1%	90.9%	87.8%	94.0%	87.8%	94.0%	87.8%	94.0%	87.8%
Intellectual Disability	97.0%	98.8%	84.9%	81.0%	88.7%	81.0%	88.7%	81.0%	88.7%	81.0%
Multiple Disabilities/ Deaf-Blindness	96.6%	98.8%	86.0%	81.8%	90.1%	81.8%	90.1%	81.8%	90.1%	81.8%
Other Health Impairment	97.5%	99.1%	89.4%	86.2%	92.7%	86.2%	92.7%	86.2%	92.7%	86.2%
Orthopedic Impairment/Traumatic Brain Injury	97.2%	98.9%	88.5%	85.1%	91.9%	85.1%	91.9%	85.1%	91.9%	85.1%
Specific Learning Disability	96.8%	97.9%	89.3%	87.4%	91.3%	87.4%	91.3%	87.4%	91.3%	87.4%
Speech & Language Impairment	95.1%	96.8%	77.6%	74.2%	81.1%	74.2%	81.1%	74.2%	81.1%	74.2%
Visual Impairment	97.2%	99.0%	87.5%	83.8%	91.2%	83.8%	91.2%	83.8%	91.2%	83.8%
<b>Population Estimates (including SLD)</b>	--	--	<b>86.9%</b>	<b>85.8%</b>	<b>87.9%</b>	<b>85.8%</b>	<b>87.9%</b>	<b>85.8%</b>	<b>87.9%</b>	<b>85.8%</b>
<b>Population Estimates (excluding SLD)</b>	<b>96.7%</b>	<b>97.3%</b>	--	--	--	--	--	--	--	--

## Appendix B: Estimates for Years 2-14<sup>17</sup>

**TABLE B-1**  
**Percentages of services for which there was evidence of service provision by disability category, 2004-05 to 2016-17**

	2004-05		2005-06		2006-07		2007-08		2008-09		2009-10		2010-11	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
AUT	95%	528	87%	594	89%	704	91%	727	95%	771	95%	817	96%	679
DHH	95%	546	93%	524	90%	633	97%	622	96%	621	97%	664	97%	615
ED	81%	306	85%	355	80%	437	90%	400	94%	454	89%	495	83%	425
ID	96%	385	88%	457	87%	577	92%	564	95%	597	96%	615	97%	527
MD/DB	98%	432	93%	446	95%	656	95%	690	98%	707	97%	791	95%	462
OHI	84%	416	84%	424	81%	483	95%	539	93%	511	93%	525	90%	478
OI/TBI	93%	693	91%	740	89%	841	96%	893	97%	961	95%	981	95%	732
SLU	95%	338	78%	389	86%	459	91%	432	90%	928	95%	882	94%	807
VI	98%	630	96%	659	96%	751	98%	743	97%	756	99%	663	98%	593
<b>Overall Population Estimate (w/o SLD)</b>	<b>95%</b>						<b>92%</b>			<b>94%</b>			<b>95%</b>	
<b>SLD</b>	<b>73%</b>	<b>723</b>	<b>79%</b>	<b>744</b>	<b>74%</b>	<b>1,187</b>	<b>93%</b>	<b>1,251</b>	<b>91%</b>	<b>1,222</b>	<b>93%</b>	<b>1,271</b>	<b>91%</b>	<b>1,152</b>

	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
AUT	95%	632	99%	653	97%	631	98%	681	98%	650	96%	752
DHH	96%	589	98%	541	98%	541	98%	547	99%	509	99%	608
ED	85%	422	97%	427	88%	443	96%	498	96%	495	96%	532
ID	95%	508	98%	493	98%	468	99%	539	98%	519	97%	608
MD/DB	95%	486	98%	542	98%	496	97%	595	97%	541	97%	623
OHI	94%	493	98%	505	94%	419	98%	466	97%	461	97%	556
OI/TBI	95%	749	98%	737	98%	709	98%	803	95%	764	97%	865
SLU	91%	772	98%	715	97%	684	99%	688	99%	673	95%	713
VI	94%	618	99%	561	98%	596	99%	618	98%	572	97%	649
<b>Overall Population Estimate (w/o SLD)</b>	<b>94%</b>		<b>98%</b>		<b>96%</b>		<b>98%</b>		<b>98%</b>		<b>97%</b>	
<b>SLD</b>	<b>94%</b>	<b>1,140</b>	<b>98%</b>	<b>1,126</b>	<b>96%</b>	<b>1,085</b>	<b>98%</b>	<b>1,106</b>	<b>97%</b>	<b>1,061</b>	<b>97%</b>	<b>1,280</b>

Note: In Years 8 - 14, yearly services were removed from the estimates. In the prior years, yearly services were kept in the analyses only if they met the log requirements.

<sup>17</sup> Due to considerable changes in the study methodology since Year 1, the results for the first year (2003-04) are not presented.

**TABLE B-2**

**Percentages of services with frequency at least equal to the IEP by disability category, 2004-05 to 2016-17**

	2004-05		2005-06		2006-07		2007-08		2008-09		2009-10		2010-11	
	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
AUT	56%	458	59%	462	66%	581	75%	633	70%	676	74%	753	81%	652
DHH	58%	486	66%	423	75%	528	77%	577	74%	562	73%	631	85%	592
ED	49%	206	67%	254	74%	320	69%	345	68%	373	66%	423	74%	348
ID	54%	348	61%	365	74%	462	76%	487	74%	525	74%	572	81%	506
MID/DB	60%	363	70%	374	80%	531	82%	551	74%	550	71%	630	87%	433
OHI	56%	305	58%	298	70%	351	78%	483	72%	442	75%	475	81%	428
OI/TBI	67%	543	70%	582	78%	612	80%	748	77%	785	74%	798	85%	687
SLD	52%	442	54%	459	65%	794	77%	1,105	73%	1,058	77%	1,168	83%	1,040
SLI	49%	289	50%	282	62%	360	71%	367	70%	776	72%	820	81%	751
VI	60%	571	68%	583	82%	690	85%	686	84%	693	82%	637	86%	570
<b>Total (unweighted)</b>	<b>57%</b>	<b>4,011</b>	<b>63%</b>	<b>4,082</b>	<b>73%</b>	<b>5,229</b>	<b>78%</b>	<b>5,982</b>	<b>74%</b>	<b>6,440</b>	<b>74%</b>	<b>6,907</b>	<b>83%</b>	<b>6,007</b>
<b>Overall Population Estimate</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>76%</b>	<b>--</b>	<b>72%</b>	<b>--</b>	<b>74%</b>	<b>--</b>	<b>82%</b>	<b>--</b>

	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17	
	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Year 16	Year 17	Year 18	Year 19	Year 20
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
AUT	82%	602	88%	540	83%	456	89%	508	87%	482	88%	714
DHH	82%	563	83%	417	81%	400	85%	389	87%	332	86%	586
ED	73%	352	83%	369	84%	316	85%	380	91%	367	91%	507
ID	83%	482	85%	405	85%	362	84%	402	83%	363	85%	582
MID/DB	87%	460	87%	455	85%	399	89%	451	88%	370	86%	599
OHI	82%	465	86%	391	88%	321	88%	352	84%	340	89%	530
OI/TBI	85%	713	86%	615	84%	564	87%	601	84%	510	89%	827
SLD	86%	1,076	86%	874	85%	765	89%	787	87%	716	89%	1,210
SLI	84%	701	84%	571	80%	462	85%	496	81%	422	78%	661
VI	93%	583	92%	481	91%	437	85%	479	90%	383	88%	616
<b>Total (unweighted)</b>	<b>84%</b>	<b>5,997</b>	<b>86%</b>	<b>5,118</b>	<b>84%</b>	<b>4,482</b>	<b>87%</b>	<b>4,845</b>	<b>86%</b>	<b>4,285</b>	<b>87%</b>	<b>6,832</b>
<b>Overall Population Estimate</b>	<b>83%</b>	<b>--</b>	<b>86%</b>	<b>--</b>	<b>84%</b>	<b>--</b>	<b>87%</b>	<b>--</b>	<b>85%</b>	<b>--</b>	<b>87%</b>	<b>--</b>

Note 1: 2007-08 is the first year in which a population estimate was calculated for frequency.

Note 2: In Years 8 - 14, yearly services were removed from the estimates. In the prior years, yearly services were kept in the analyses only if they met the frequency requirements.

**TABLE B-3**

**Percentages of services with duration at least equal to the IEP by disability category, 2004-05 to 2016-17**

	2004-05		2005-06		2006-07		2007-08		2008-09		2009-10		2010-11	
	Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
AUT	58%	458	59%	463	60%	573	69%	627	63%	675	61%	757	65%	651
DHH	60%	484	68%	419	76%	513	77%	579	75%	559	72%	630	80%	592
ED	65%	200	69%	255	77%	310	67%	343	70%	380	66%	425	65%	347
ID	55%	345	64%	365	69%	463	73%	483	70%	516	65%	572	67%	506
IMD/DB	60%	359	74%	373	82%	548	82%	598	74%	618	68%	701	78%	431
OHI	59%	299	61%	302	65%	338	72%	485	67%	436	69%	473	69%	428
OI/TBI	68%	542	73%	582	78%	641	80%	806	75%	828	68%	878	76%	686
SLD	56%	435	59%	467	56%	762	72%	1,094	66%	1,032	69%	1,160	71%	1,037
SU	51%	288	53%	282	62%	354	70%	366	64%	764	64%	819	66%	750
VI	63%	567	69%	581	81%	685	81%	689	80%	691	75%	641	77%	566
<b>Total (unweighted)</b>	<b>60%</b>	<b>3,977</b>	<b>65%</b>	<b>4,089</b>	<b>70%</b>	<b>5,187</b>	<b>75%</b>	<b>6,070</b>	<b>70%</b>	<b>6,499</b>	<b>68%</b>	<b>7,056</b>	<b>71%</b>	<b>5,994</b>
<b>Overall Population Estimate</b>	--	--	--	--	--	--	<b>72%</b>	--	<b>67%</b>	--	<b>67%</b>	--	<b>69%</b>	--

	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17	
	Year 9		Year 10		Year 11		Year 12		Year 13		Year 14	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
AUT	69%	601	74%	540	70%	456	72%	505	74%	481	70%	708
DHH	76%	563	79%	417	72%	400	80%	389	81%	332	78%	586
ED	65%	351	68%	365	60%	313	67%	377	64%	361	71%	505
ID	68%	481	69%	405	71%	361	77%	401	74%	361	72%	580
IMD/DB	76%	458	76%	455	72%	399	77%	450	79%	369	74%	598
OHI	71%	464	68%	391	65%	321	72%	349	59%	339	72%	525
OI/TBI	73%	711	77%	615	74%	564	73%	601	77%	509	79%	825
SLD	70%	1,076	70%	873	64%	765	71%	778	70%	711	74%	1,193
SU	70%	701	73%	571	68%	462	71%	494	72%	422	67%	655
VI	78%	583	76%	481	76%	437	72%	476	79%	376	76%	614
<b>Total (unweighted)</b>	<b>72%</b>	<b>5,989</b>	<b>73%</b>	<b>5,113</b>	<b>69%</b>	<b>4,478</b>	<b>73%</b>	<b>4,820</b>	<b>73%</b>	<b>4,261</b>	<b>74%</b>	<b>6,789</b>
<b>Overall Population Estimate</b>	<b>70%</b>	--	<b>71%</b>	--	<b>68%</b>	--	<b>72%</b>	--	<b>71%</b>	--	<b>72%</b>	--

Note 1: 2007-08 is the first year in which a population estimate was calculated for duration.

Note 2: In Years 8 - 14, yearly services were removed from the estimates. In the prior years, yearly services were kept in the analyses only if they met the duration requirements.

**TABLE B-4**

**Percentages of services for which there was evidence of service provision by service category, 2004-05 to 2016-17**

	2004-05 Year 2		2005-06 Year 3		2006-07 Year 4		2007-08 Year 5		2008-09 Year 6		2009-10 Year 7		2010-11 Year 8	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
APE	99%	977	96%	962	98%	1,038	99%	1,010	98%	944	97%	908	98%	736
DHH	100%	390	99%	392	96%	448	99%	453	99%	487	98%	484	100%	414
LAS	96%	1,075	86%	1,147	82%	1,420	86%	1,414	90%	1,759	97%	1,825	96%	1,655
LRE	85%	197	95%	198	96%	254	95%	276	100%	249	92%	232	97%	170
NPA	95%	55	85%	110	92%	155	87%	187	93%	295	90%	372	99%	142
OT	98%	402	93%	427	92%	537	94%	530	98%	521	97%	557	95%	461
PRE	100%	75	38%	110	95%	100	100%	102	100%	127	90%	112	100%	75
PT	100%	131	94%	148	98%	218	98%	247	99%	307	99%	339	94%	105
RSP	65%	959	77%	1,055	71%	1,592	95%	1,612	91%	1,733	91%	1,789	87%	1,764
SMH	88%	409	86%	459	87%	572	94%	641	96%	686	93%	714	88%	587
VI	99%	327	97%	324	100%	394	100%	389	100%	420	100%	372	100%	361

	2011-12 Year 9		2012-13 Year 10		2013-14 Year 11		2014-15 Year 12		2015-16 Year 13		2016-17 Year 14	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
APE	97%	739	99%	752	100%	734	99%	785	99%	820	99%	858
DHH	98%	407	98%	383	97%	389	99%	378	99%	326	98%	388
LAS	95%	1,627	98%	1,590	98%	1,554	99%	1,593	99%	1,518	95%	1,648
LRE	93%	180	99%	162	98%	157	97%	210	99%	162	97%	200
NPA	75%	151	93%	169	90%	220	83%	285	85%	372	93%	471
OT	91%	435	99%	433	98%	412	99%	495	98%	475	96%	593
PRE	61%	98	100%	91	100%	22	94%	17	*	*	94%	17
PT	98%	110	98%	121	97%	95	100%	98	97%	102	97%	129
RSP	94%	1,719	97%	1,631	97%	1,539	98%	1,662	97%	1,556	98%	1,786
SMH	90%	574	99%	583	87%	601	99%	629	98%	572	97%	718
VI	99%	369	100%	375	99%	349	98%	389	100%	334	97%	378

Note 1: In Years 8 - 14, yearly services were removed from the estimates. In the prior years, yearly services were kept in the analyses only if they met the log requirements.

Note 2: The estimate for Pre-school services was suppressed in 2015-16 due to the low number of observations.

**TABLE B-5**

**Percentages of services with frequency at least equal to the IEP by service category, 2004-05 to 2016-17**

	2004-05		2005-06		2006-07		2007-08		2008-09		2009-10		2010-11	
	Year 2		Year 3		Year 4		Year 5		Year 6		Year 7		Year 8	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
APE	68%	893	70%	865	81%	945	85%	973	81%	879	77%	866	87%	718
DHH	62%	362	69%	346	81%	397	77%	430	73%	446	73%	459	86%	408
LAS	42%	965	48%	895	60%	1,085	69%	1,140	65%	1,474	67%	1,753	79%	1,577
LRE	80%	145	87%	174	87%	212	91%	246	87%	243	86%	211	90%	162
NPA	80%	39	70%	77	71%	123	77%	150	71%	245	76%	308	91%	141
OT	55%	367	67%	365	72%	429	72%	426	66%	423	71%	457	75%	437
PRE	80%	51	81%	36	76%	87	90%	101	91%	122	89%	99	93%	74
PT	61%	72	79%	90	71%	114	80%	113	78%	125	71%	134	77%	99
RSP	60%	498	54%	593	67%	994	81%	1,461	79%	1,507	81%	1,611	85%	1,529
SMH	45%	318	65%	352	71%	459	64%	571	61%	574	60%	645	70%	509
VI	63%	301	71%	289	92%	384	87%	371	89%	402	87%	364	94%	353

	2011-12		2012-13		2013-14		2014-15		2015-16		2016-17	
	Year 9		Year 10		Year 11		Year 12		Year 13		Year 14	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
APE	91%	718	91%	632	89%	562	90%	577	86%	565	89%	842
DHH	84%	397	81%	304	84%	289	88%	269	86%	215	85%	373
LAS	82%	1,549	82%	1,303	79%	1,140	84%	1,170	81%	1,014	80%	1,530
LRE	86%	167	91%	128	95%	120	88%	153	92%	103	95%	192
NPA	88%	114	94%	114	91%	144	89%	198	86%	254	94%	431
OT	72%	395	77%	376	77%	328	83%	377	83%	343	76%	569
PRE	95%	60	95%	80	95%	19	*	*	**	*	38%	16
PT	84%	108	91%	103	71%	77	88%	77	86%	69	92%	124
RSP	87%	1,615	91%	1,273	89%	1,132	91%	1,226	90%	1,073	94%	1,711
SMH	69%	510	78%	484	81%	414	83%	497	87%	427	85%	685
VI	96%	364	96%	321	92%	257	82%	293	90%	216	88%	359

Note 1: In Years 8 - 14, yearly services were removed from the estimates. In the prior years, yearly services were kept in the analyses only if they met the frequency requirements.

Note 2: The estimate for Pre-school services was suppressed in 2014-15 and 2015-16 due to the low number of observations.



**TABLE B-6**

**Percentages of services with duration at least equal to the IEP by service category, 2004-05 to 2016-17**

	2004-05 Year 2		2005-06 Year 3		2006-07 Year 4		2007-08 Year 5		2008-09 Year 6		2009-10 Year 7		2010-11 Year 8	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
APE	67%	881	73%	869	83%	945	86%	966	79%	868	70%	860	81%	716
DHH	64%	361	72%	342	84%	383	79%	431	76%	446	76%	458	86%	408
LAS	44%	959	50%	899	60%	1,064	67%	1,141	61%	1,459	59%	1,754	66%	1,575
LRE	80%	144	87%	176	81%	211	81%	248	85%	241	75%	208	81%	162
NPA	83%	42	68%	77	55%	119	60%	148	52%	243	54%	301	51%	140
OT	56%	365	66%	369	67%	435	68%	461	62%	452	65%	514	68%	436
PRE	86%	51	83%	36	69%	86	79%	97	80%	119	79%	99	89%	74
PT	60%	72	75%	81	80%	173	88%	202	85%	221	83%	253	73%	99
RSP	61%	487	60%	601	55%	946	75%	1,437	69%	1,457	72%	1,602	69%	1,526
SMH	62%	313	67%	355	74%	445	67%	570	68%	589	63%	642	65%	507
VI	67%	302	72%	284	89%	380	83%	369	85%	404	81%	365	80%	351

	2011-12 Year 9		2012-13 Year 10		2013-14 Year 11		2014-15 Year 12		2015-16 Year 13		2016-17 Year 14	
	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services	%	N of Services
APE	73%	717	77%	632	74%	562	73%	575	79%	565	82%	840
DHH	84%	397	82%	304	78%	289	82%	269	85%	215	80%	373
LAS	72%	1,548	72%	1,303	68%	1,140	73%	1,165	74%	1,013	69%	1,523
LRE	75%	167	81%	128	88%	120	77%	153	83%	103	90%	192
NPA	56%	112	43%	114	48%	144	49%	198	45%	253	47%	429
OT	67%	395	72%	376	70%	328	81%	375	80%	342	70%	569
PRE	75%	60	76%	80	84%	19	*	*	*	*	81%	16
PT	82%	108	85%	103	65%	77	87%	77	87%	69	90%	124
RSP	67%	1,612	69%	1,273	65%	1,131	70%	1,217	67%	1,059	77%	1,682
SMH	67%	509	72%	479	66%	411	68%	490	71%	424	71%	683
VI	85%	364	81%	321	82%	257	78%	293	83%	212	77%	358

Note 1: In Years 8 - 14, yearly services were removed from the estimates. In the prior years, yearly services were kept in the analyses only if they met the duration requirements.

Note 2: The estimate for Pre-school services was suppressed in 2014-15 and 2015-16 due to the low number of observations.



*Making Research Relevant*

## Year 14 (2016-17): Additional exploratory analyses for frequency and duration

### *Excluding RSP records*

- If all RSP records were removed from the frequency analyses, the weighted population estimate for frequency would decline from 86.9% (confidence intervals of 85.8% - 87.9%) to **82.2% (80.8% - 83.5%)**.
- If all RSP records were removed from the duration analysis, the weighted population estimate for duration would decline from 71.8% (confidence interval of 70.4% - 73.2%) to **68.8% (67.2% - 70.4%)**.

### *Excluding services that missed the required frequency by one*

- If services that missed the required frequency of 8 or 16 (1x or 2x weekly) by 1 were removed from the analysis, the weighted population estimate for duration would increase from 71.8% (confidence interval of 70.4% - 73.2%) to **74.2% (72.9% - 75.6%)**.
- If all services that missed the required frequency by 1 were removed from the analysis (e.g., not restricted to frequencies of 8 or 16), the weighted population estimate for duration would increase from 71.8% (confidence interval of 70.4% - 73.2%) to **77.8% (76.5% - 79.1%)**.

### *Increasing the duration flexibility*

- From 2% to 10%: Under the current rule, if the total duration provided across an 8-week/2-month period is within 2% of the requirement, the duration requirement is considered to be met (with the exception of certain APE and RSP services in which 90% of the IEP duration is used). If this allowance was extended to 10% of the requirement, the weighted population estimate for duration would increase from 71.8% (confidence interval of 70.4% - 73.2%) to **78.5% (77.2% - 79.7%)**.
- From 2% to 15%: If this allowance was extended to 15% of the requirement, the weighted population estimate for duration would increase from 71.8% (confidence interval of 70.4% - 73.2%) to **84.7% (83.6% - 85.8%)**.

*Services that miss both frequency and duration*

- Among the services included in both the frequency and duration analysis, 2% missed frequency only, 11% missed both frequency and duration, and 16% missed duration only.

**Exhibit 1: Number and percentage of services that missed both frequency and duration, frequency only, or duration only, among records that were included in both the frequency and duration analysis**

	Services in both the freq and dur analysis		Missed freq		Missed dur		Missed both frequency and duration		Missed frequency only		Missed duration only	
	N	%	N	%	N	%	N	%	N	%	N	%
APE	840		11%	18%	64	8%	29	3%	90	11%		
DHH	373		15%	20%	50	13%	7	2%	24	6%		
LAS	1,522		20%	31%	256	17%	47	3%	216	14%		
LRE	192		5%	10%	8	4%	1	1%	11	6%		
OT	569		24%	30%	123	22%	14	2%	47	8%		
PT	124		8%	10%	7	6%	3	2%	5	4%		
SMH	683		16%	29%	87	13%	19	3%	108	16%		
VI	358		12%	23%	33	9%	9	3%	48	13%		
NPA	429		6%	53%	20	5%	5	1%	207	48%		
RSP	1,682		6%	23%	88	5%	20	1%	302	18%		
<b>Total &lt;1&gt;</b>	<b>6,788</b>		<b>13%</b>	<b>26%</b>	<b>737</b>	<b>11%</b>	<b>155</b>	<b>2%</b>	<b>1,060</b>	<b>16%</b>		
Most common frequency across 8-wks/2-months					8 (68%)		8 (61%)		8 (41%)			
Most common duration across 8-wks/2-months					240 (48%) <2>		240 (46%)		480 (21%) <3>			

<1> The total includes preschool records, which were suppressed due to low n's.

<2> 12% of the services that missed both frequency and duration had required duration amounts that exceeded 480 minutes.

<3> 50% of services that missed duration only had a required duration amount that exceeded 480 minutes.

**Exhibit 2: Service intervals of services that missed both frequency and duration, frequency only, or duration only, among records that were included in both the frequency and duration analysis**

Interval of records that missed both frequency and duration		
	N	%
Daily	5	1%
Monthly	136	18%
Weekly	596	81%
<b>Total</b>	<b>737</b>	<b>100%</b>

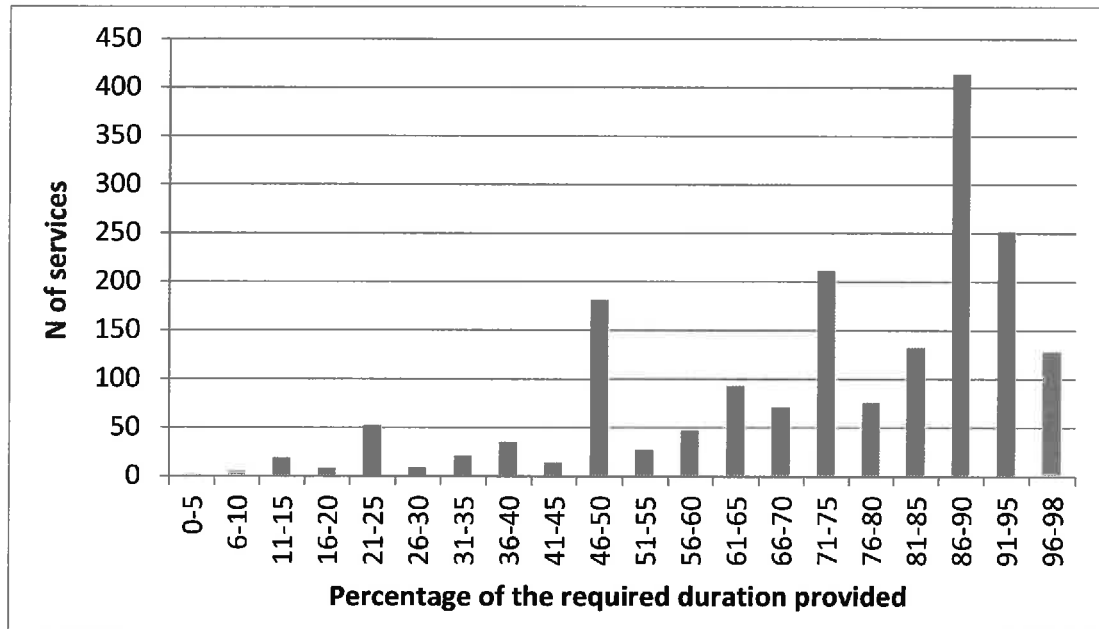
Interval of records that missed frequency only		
	N	%
Daily	2	1%
Monthly	22	14%
Weekly	131	85%
<b>Total</b>	<b>155</b>	<b>100%</b>

Interval of records that missed duration only		
	N	%
Daily	9	0.8%
Monthly	394	37%
Weekly	657	62%
<b>Total</b>	<b>1,060</b>	<b>100%</b>

*Distribution of provided duration in relation to the required duration*

Exhibit 3 shows the number of services that missed the duration requirements by the percentage of the required duration that was actually provided. Of the 1,797 services that did not meet the duration requirement, 44% (794) were provided at least 86% of the required duration. At the same time, another 44% (795 of 1,797) had provided durations that were 75% or less of the required amount.

**Exhibit 3. Number of services by the percentage of required duration provided (among 1,797 services that did not meet the duration requirement)**



*School level*

- Rates by school level were relatively similar, although SE centers appear to have lower rates of meeting frequency and duration (no statistical tests conducted at this time).
- Exhibit 5 shows that LAS and RSP made up half of the services that missed duration in elementary schools. RSP was the most common service at the middle and high school levels to miss duration.

**Exhibit 4. Frequency and duration rates by school level/type**

		Freq met			Dur met		
		Freq met	Freq not met	Total	Dur met	Dur not met	Total
Elem	N	3,777	651	4,428	3,156	1,248	4,404
	%	85.3	14.7	100	71.7	28.3	100
Middle	N	938	93	1,031	790	234	1,024
	%	91.0	9.0	100	77.2	22.9	100
High	N	1,072	117	1,189	921	258	1,179
	%	90.2	9.8	100	78.1	21.9	100
SE Centers	N	147	30	177	122	54	176
	%	83.1	16.9	100	69.3	30.7	100
<b>Total</b>	<b>N</b>	<b>5,940</b>	<b>1,797</b>	<b>6,832</b>	<b>4,992</b>	<b>1,797</b>	<b>6,789</b>
	<b>%</b>	<b>86.9</b>	<b>26.5</b>	<b>100</b>	<b>73.5</b>	<b>26.5</b>	<b>100</b>

Note: The total includes six schools that did not fit into the above school categories.

**Exhibit 5. Distribution of services that did not meet duration, by school level/type**

	Elem		Middle		High		SE Center		Total
	N	%	N	%	N	%	N	%	N
APE	123	10%	14	6%	12	5%	5	9%	154
DHH	53	4%	11	5%	5	2%	5	9%	74
LAS	378	30%	44	19%	31	12%	19	33%	472
LRE	9	1%	3	1%	7	3%	0	0%	19
OT	141	11%	16	7%	5	2%	8	14%	170
PT	11	1%	1	0%	0	0%	0	0%	12
SMH	104	8%	40	17%	48	19%	3	5%	195
VI	39	3%	12	5%	24	9%	6	11%	81
NPA	141	11%	29	12%	46	18%	11	19%	227
RSP	246	20%	64	27%	80	31%	0	0%	390
<b>Total</b>	<b>1,248</b>	<b>100%</b>	<b>234</b>	<b>100%</b>	<b>258</b>	<b>100%</b>	<b>57</b>	<b>100%</b>	<b>1,797</b>

\* Total includes Preschool services, which were suppressed due to low n's, as well as six schools that did not fit the above school categories.

*Number of services*

- A larger number of services specified for a student appears not to have a significant effect on the frequency and duration rates. For example, in nearly 470 cases, the students had five or more services reported on their IEPs. Of these services, 88% met frequency requirements and 69% met the duration requirements. This compares to more than 2,380 cases in which students had just one service reported on their IEPs. Among these services, 88% and 75% met the frequency and duration requirements respectively.

**Exhibit 6. Number of services that met frequency or duration, by the number of services required per student**

N of services per student	Frequency met	Frequency not met	Total	Duration met	Duration not met	Total
1	2,119	293	2,412	1,785	604	2,389
2	1,814	258	2,072	1,576	483	2,059
3	996	183	1,179	833	343	1,176
4	597	103	700	475	222	697
5 or more	414	55	469	323	145	468
<b>Total</b>	<b>5,940</b>	<b>892</b>	<b>6,832</b>	<b>4,992</b>	<b>1,797</b>	<b>6,789</b>

\* The frequency and duration totals differ because some cases were dropped from the duration analysis due to coding rule

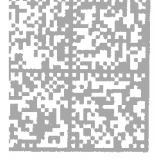
**Exhibit 7. Percentage of services that met frequency or duration, by the number of services required per student (based on Exhibit 6 figures)**

N of services per student	Frequency met	Frequency not met	Duration met	Duration not met
1	88%	12%	75%	25%
2	88%	12%	77%	23%
3	84%	16%	71%	29%
4	85%	15%	68%	32%
5 or more	88%	12%	69%	31%



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