DaSy The Center for IDEA Early Childhood Data Systems

Critical Question 1.B.1. Analysis Plan

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Authors: Kellen Reid & Betsy Mercier

1.B.1 What are characteristics of the services and supports provided to children/families in early intervention/early childhood special education (EI/ECSE)?

Why does this question matter?

Answers to this broad critical question will help Part C (EI) and Part B 619 (ECSE) staff gain information about planned and received services. Children must receive all planned services outlined in the Individual Family Service Plan/Individualized Education Program (IFSP/IEP), which for some children include more than one type (e.g., physical therapy and occupational therapy). You can use information about planned and received services to better understand the needs of children and families in your program as well as service utilization. This information can also be used to target improvement strategies. For example, a significant difference between planned and received services could prompt program leaders to better understand the budget implications and reevaluate where funds are spent.

The analysis plans address four specific questions related to this broad question about planned and received services. Choose the specific question(s) most relevant to your context. Each analysis plan describes parameters to set and key decisions to make based on your state context. For example, each analysis plan requires you to choose a time period. If you choose to answer more than one of the specific critical questions, make sure you select the same time period for all.

Click on a question to jump to that section

1.B.1.a. What percentage of children in EI/ECSE were planned to have each type of service (e.g., occupational therapy, physical therapy) according to their IFSPs/IEPs within a given time period (e.g., the past month or year)? 2

1.B.1.b. What percentage of children received each type of service within a given time period (e.g., the past month or year)? 5

1.B.1.c. What amount of each type of service (e.g., frequency, intensity, total hours) do children in EI/ECSE receive? 8

1.B.1.d. What is the relationship between the amount of services planned and the amount of services received? 12

Appendix. Crosswalk of Critical Question Data Elements with CEDS Elements (Version 13) 18

There is a Common Education Data Standards (CEDS) crosswalk of the data elements used in the analysis plans. Your data system may use different terminology or variable names for these data elements, and the data elements may reside in more than one data system. These elements are also crosswalked with the CEDS data elements, as available. Open the links in the appendix to see more information from CEDS about the data elements. You do not need to use or have a login for CEDS to use these analysis plans. If there are no links to CEDS, the appendix provides other data element options that may be available in your data system.

1.B.1.a. What percentage of children in EI/ECSE were planned to have each type of service (e.g., occupational therapy, physical therapy) according to their IFSPs/IEPs within a given time period (e.g., the past month or year)?

Data elements and considerations

This question is about planned services (not received services) for children with active IFSPs/IEPs. To answer this question, your data system will need to have data on which IFSPs/IEPs were active over a time period you choose and on planned services from the IFSPs/IEPs.

If a child has more than one IFSP/IEP during the time period (e.g., IFSP/IEP revisions or updates made during that period), you may either combine data from all IFSP/IEP documents or use data from the most recent IFSP/IEP.

If the same type of service exists in multiple IFSPs/IEPs for an individual child within the chosen period, be sure to remove the duplicates. For example, if a child has two IFSPs/IEPs within the period and both include planned physical therapy services, then count physical therapy only once. In other words, each child should only have a count of 1 or 0 for each planned service type within the period.

Data Element	Considerations
Child Identifier	There may be multiple instances of a single child ID, full name, or birth date, or a conflicting combination of those identifiers. Review these matches to confirm whether the data belong to the same child or whether the same ID was mistakenly assigned to multiple children.
Planned Service Type	You could decide to analyze a subset of service types. The number or percentage of children for some planned service types may be very small, so while you may include all services in your analysis, you can opt to report only on the most frequently planned services.
Planned Service Start Date	If your data system does not have a planned service start date element, assume the planned start date is the same as the IFSP/IEP signature date.
Planned Service End Date	This element may be in your data system as “service end date.” If your data system does not provide a planned service end date, you may be able to use planned service start date and duration. Alternatively, you could assume the end date will be the same as the IFSP/IEP end date. For instance, if a child’s IFSP/IEP has physical therapy services planned to start in October and there is no specified end date, assume the planned service end date will be October of the next year.

Steps for conducting the analysis

Prepare the dataset and review data

1. Choose the time period you will use for the analysis.
2. Pull a dataset containing unique child identifiers, service types, planned service start dates, and planned service end dates.
3. Filter the dataset using the planned service start date and planned service end date elements based on the chosen period.
   a. Filter to include planned service start dates that are before or during the period.
   b. Filter to include planned service end dates that are during or after the period.
4. Check for missing data, duplicated data, small cell sizes, and data that are out of range. If possible, address data quality concerns (e.g., correct missing data records, rerun data query). If there are multiple instances of the same service type for any individual child, eliminate the duplicate service types for that child.

Conduct the analysis

5. Add up the total number (*N*) of children for each *planned service* type on their IFSPs/IEPs during the time period.
6. Calculate the percentage of children for each *planned service* type on their IFSPs/IEPs during the time period by dividing the total number of children in each planned service type (Step 5) by the total number of children with active IFSPs/IEPs during the period.

Example outputs and visualizations

Table a-1 is an example of the analysis output showing the number and percentage of infants and toddlers with IFSPs who were planned to have each service between January and December 2024. This information may be easier for your audience to process if you sort the table from highest to lowest value in either the "*n*" or "%" column. Data are fictitious.

Table a-1. Number and Percentage of Children Whose IFSP Included Each Planned Service in 2024 (*N* = 3,214)

Planned Services	*n*	%*
Assistive technology	107	3
Audiology	211	7
Family training/counseling	932	29
Health	17	1
Medical	21	1
Nursing	19	1
Nutrition	17	1
Occupational therapy	810	25
Physical therapy	1,993	62
Psychological	97	3
Sign language and cued language	123	4

Planned Services	*n*	%*
Service coordination	3,182	99
Social work service	335	10
Special instruction	2,314	72
Speech-language pathology	2,378	74
Transportation	144	4
Vision	99	3
Behavioral Health	0	0
Other	0	0

**Percentages add to more than 100% because an individual child can have multiple types of planned services.*

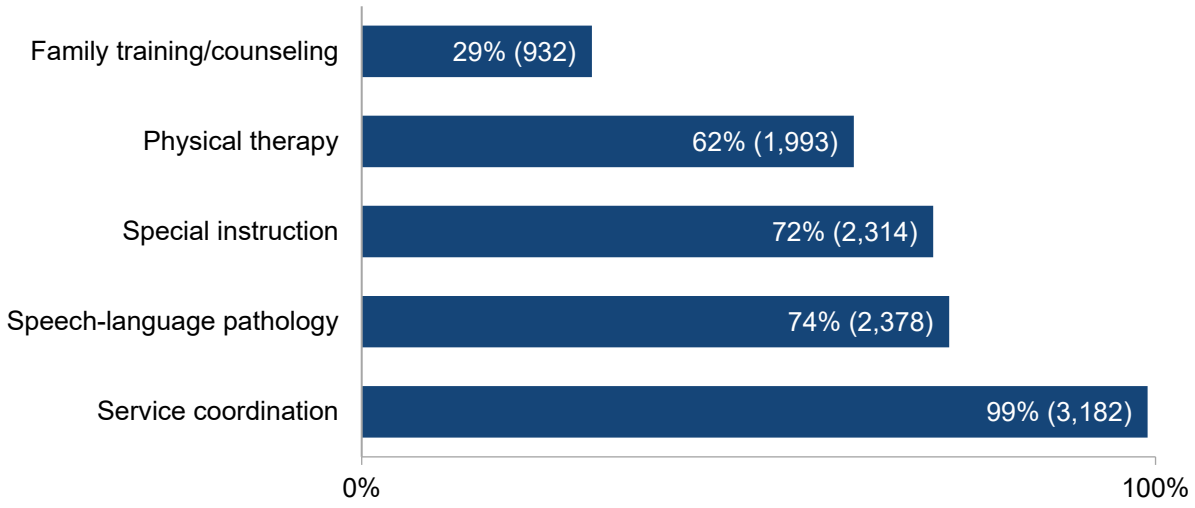
Table a-2 and Chart a-1 demonstrate two ways you might present data on the five most commonly planned services. Data are fictitious.

Table a-2. Five Most Commonly Planned Services in 2024 and Number and Percentage of Children Whose IFSP Included These Services (*N* = 3,214)

Planned Services	*n*	%*
Service coordination	3,182	99
Speech-language pathology	2,378	74
Special instruction	2,314	72
Physical therapy	1,993	62
Family training/counseling	932	29

**Percentages add to more than 100% because an individual child can have multiple types of planned services.*

Chart a-1. Five Most Commonly Planned Services in 2024 and Percentage* and Number of Children Whose IFSP Included These Services (*N* = 3,214)



**Percentages add to more than 100% because a child can have multiple types of planned services.*

1.B.1.b. What percentage of children received each type of service within a given time period (e.g., the past month or year)?

Data elements and considerations

This question is about *received services*, not planned services. Your data system will need to have data on the services that children received.

Data on received services may be available from several sources, so you may want to determine which sources have the most comprehensive and accurate information as well as a process for linking them. Some potential sources of received services data are billing information and provider records/reports.

Data Element	Considerations
Child Identifier	There may be multiple instances of a single child ID, full name, or birth date, or a conflicting combination of those identifiers. Review these matches to confirm whether the data belongs to the same child or whether the same ID was mistakenly assigned to multiple children.
Received Service Type	You could decide to analyze a subset of service types. The number/percentage of children for some received service types may be very small, so while you may include all services in your analysis, you can opt to report only on the most frequently received services.
Received Service Date	Use the received service date to identify the services that occurred during the chosen time period.

Steps for conducting the analysis

Prepare the dataset and review data

1. Choose the time period you will use for the analysis.
2. Pull a dataset containing unique child identifiers, service types, service entry dates, and service exit dates.
3. Filter the dataset using the received service dates that occurred during the chosen time period.
4. Check for missing data, duplicate data, and data that are out of range. If possible, address data quality concerns (e.g., correct missing data records, rerun data query). If there are multiple instances of the same service type for any individual child, eliminate the duplicate service types for that child. To address small cell sizes, combine data categories or weight the data to be representative of your population.

Conduct the analysis

5. Add up the total number (*N*) of children for each *received service* type on their IFSPs/IEPs during the time period.
6. Calculate the percentage of children for each *received service* type on their IFSPs/IEPs during the time period by dividing the total number of children in each received service type (Step 5) by the total number of children with active IFSPs/IEPs during the period.

Example outputs and visualizations

Table b-1 is an example of the analysis output containing the number and percentage of infants and toddlers with IFSPs who received each service between January and December 2024. This information may be easier for your audience to process if you sort the table from highest to lowest value in either the "*n*" or "%" column.

Table b-1. Number and Percentage of Children with IFSPs Who Received Each Service in 2024 (*N* = 3,214)

Received Services	*n*	%*
Service coordination	3,085	96
Speech-language pathology	2,282	71
Special instruction	2,089	65
Physical therapy	1,703	53
Family training/counseling	868	27
Occupational therapy	707	22
Social work service	161	5
Audiology	161	5
Sign language and cued language	96	3
Transportation	96	3
Assistive technology	64	2
Psychological	32	1
Vision	96	3
Health	32	1
Medical	32	1
Nursing	32	1
Behavioral health	0	0
Nutrition	0	0
Other	0	0

**Percentages add to more than 100% because an individual child can receive multiple types of services.*

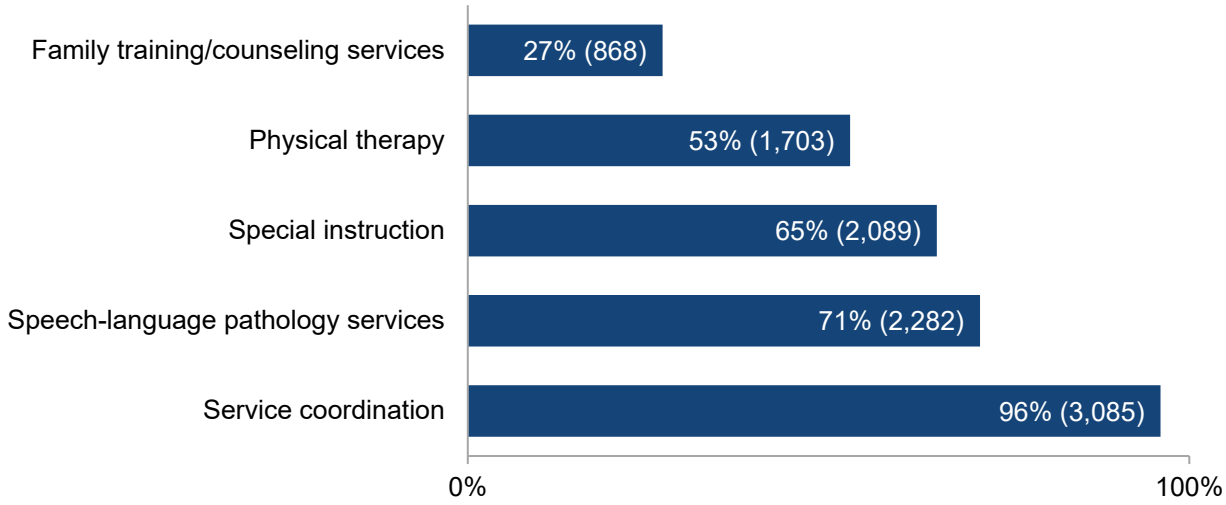
Table b-2 and Chart b-1 demonstrate two ways you might present data on the five most commonly received services. Data are fictitious.

Table b-2. Five Most Commonly Received Services in 2024 by Number and Percentage of Children with IFSPs Who Received Each Service (*N* = 3,214)

Received Services	*n*	%*
Service coordination	3,085	96
Speech-language pathology	2,282	71
Special instruction	2,089	65
Physical therapy	1,703	53
Family training/counseling	868	27

**Percentages add to more than 100% because an individual child can receive multiple types of services.*

Chart b-1. Five Most Commonly Received Services in 2024 and Percentage* and Number of Children with IFSPs Who Received Each Service Type (*N* = 3,214)



**Percentages add to more than 100% because an individual child can receive multiple types of services.*

1.B.1.c. What amount of each type of service (e.g., frequency, intensity, total hours) do children in EI/ECSE receive?

Data elements and considerations

This question is about *received services*, not planned services. Your data system will need to have data on the amounts of each service children received.

Data on received services may be available from several sources, so you may want to determine which sources can be linked and have the most comprehensive and accurate information. Some potential sources of data on the amount of received services are billing information and providers' records.

Also, consider your audience when deciding the most useful way to analyze and present this information. You could present the data as total hours, average number of hours, or categories based on their distribution (e.g., number of children who fall within a range of hours broken into quartiles for each service).

Data Element	Considerations
Child Identifier	There may be multiple instances of a single child ID, full name, or birth date, or a conflicting combination of these identifiers. Review these matches to confirm whether the data belong to the same child or whether the same ID was mistakenly assigned to multiple children.
Received Service Type	You could decide to analyze a subset of service types. The number/percentage of children for some received service types may be very small, so while you may include all services in your analysis, you can opt to report only on the most frequently received services.
Received Service Amount	This could be reported time (e.g., 1 hour) or a set unit of time for a particular service in minutes (e.g., 15-minute increments). For the example analysis below, "amount" represents the total number of hours of services children received over a specified time period. You may decide to use a different unit such as minutes. The total amount of each received service depends on the duration of the service and the count or frequency of the service (e.g., number of hours per week). Total hours for each child and received service may be calculated or directly available through your state's data system.
Received Service Date	Use the received service date to identify the services that occurred during the specified time period.

Steps for conducting the analysis

Prepare the dataset and review data

1. Choose the time period you will use for the analysis.
2. Pull a dataset containing received service types, received service amounts, and received service dates for each child with an active IFSP/IEP.
3. Filter the dataset to exclude services received outside of the chosen time period.
4. Organize the data to show total hours of each service type received for each child. Using a pivot table to organize these data will also make the calculations simpler.

Conduct the analysis

5. For each service type, calculate:
   a. The sum of received service amounts (hours) across all children receiving a service, and
   b. The total number of children receiving the service.
6. For each service type, calculate the average number of hours of services children received by dividing the sum of received service amounts (Step 5a) by the total number of children receiving that service (Step 5b).
7. If you want to understand the variability in the amount of received services (see Chart c-2), calculate the standard deviation of the service amounts for each child and service type. In Excel, you can calculate standard deviations using the "STDEV.S" formula. To calculate two standard deviations, multiply the standard deviation value by two.
8. Check the total hours and number of children for potential outliers, missing data, and data that are unclear or out of range.

Example outputs and visualizations

All tables and charts in this section present example data from an ECSE program about the hours of received services for children with active IEPs between January and December 2024.

Table c-1. Total Amount (Hours) of ECSE Received Services in 2024 (*N* = 112,714), Number of Children Receiving Each Service (*N* = 1,110), and Average Hours per Child and Standard Deviations

Received Services Type	Total Hours of Service Received	# of Children Receiving Service	Average Hours Received per Child	Standard Deviation
Assistive technology	4,020	60	67	18
Audiology	4,400	100	44	17
Behavioral health	9,250	125	74	27
Family training/counseling	1,950	25	78	26
Health	1,620	30	54	19
Medical	1,070	10	107	43
Nursing	1,164	12	97	38
Nutrition	1,242	18	69	26
Occupational therapy	15,264	212	72	28
Physical therapy	18,900	180	105	18
Psychological	6,014	62	97	27
Sign language and cued language	2,040	20	102	12
Social work	2,190	30	73	13
Special instruction	24,860	220	113	26
Speech-language pathology	16,750	250	67	22
Transportation	0	0	N/A	N/A
Vision	1,980	33	60	23
Other	0	0	N/A	N/A

Note. N/A = not applicable.

Chart c-1 demonstrates how you might present data on the total hours of received services and the number of children receiving each service, sorted by most to least total received hours.

Chart c-1. Total Hours of ECSE Received Services in 2024 (*N* = 112,714) by Children (*N* = 1,110) for Each Service Type

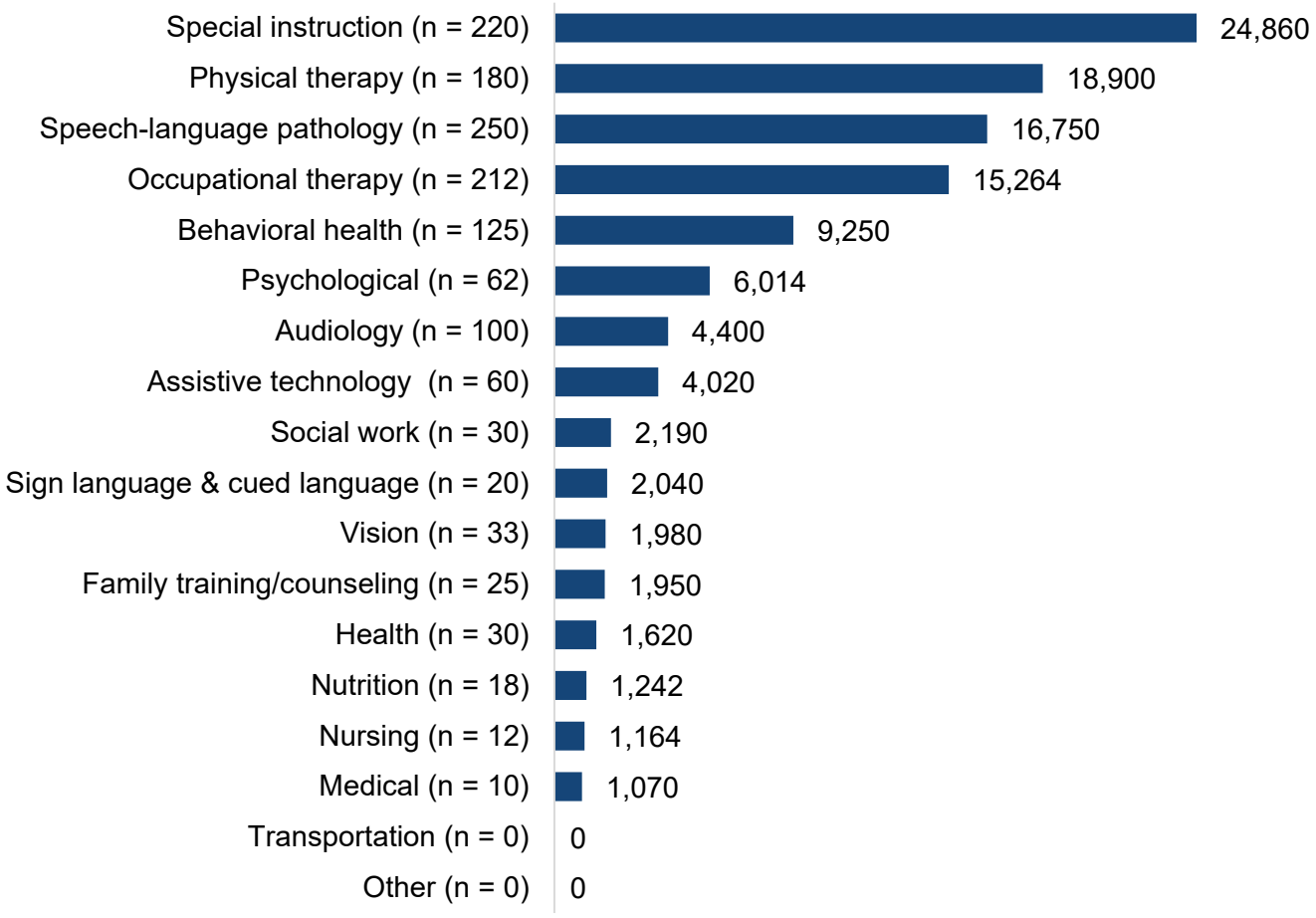
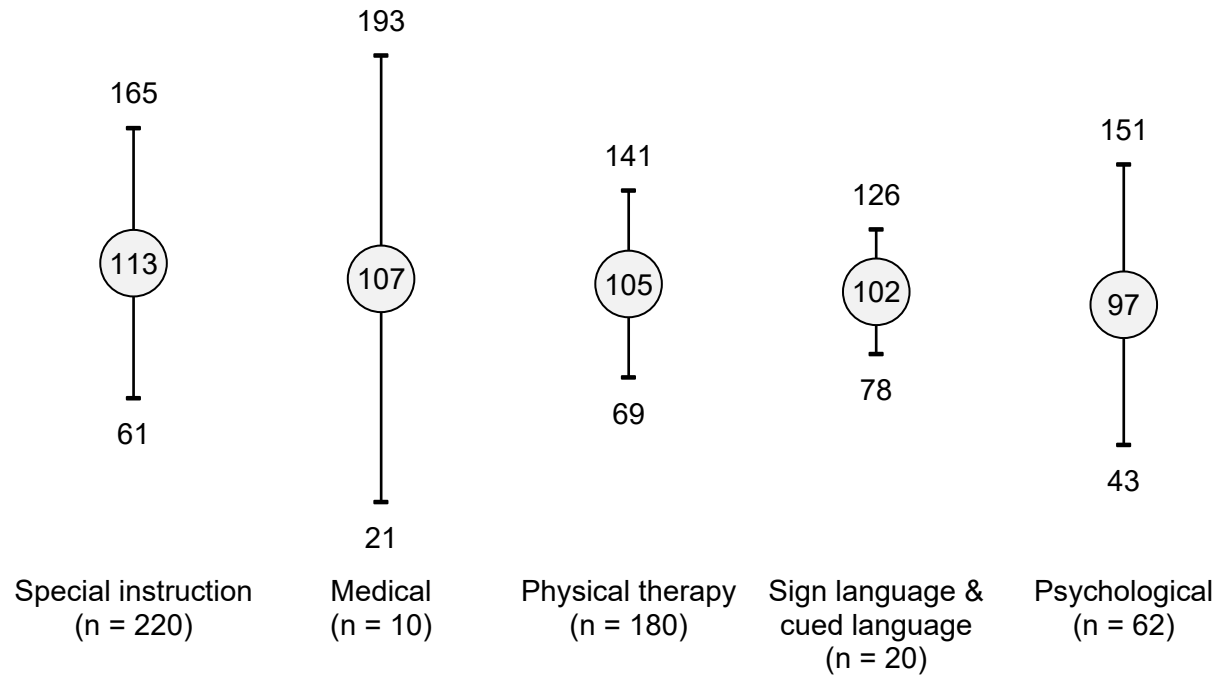


Chart c-2 shows the five service types with the highest average hours of received services and their +2 and −2 standard deviations. This visualization could help staff identify unusual patterns or instances of extremely high or low hours received or help them understand or anticipate programmatic needs such as staffing or budgeting.

Chart c-2. Five Service Types with Highest Average Amount (Hours) of Services Received by Children in ECSE (*N* = 1,110) in 2024, with +/−2 Standard Deviations



Note. The center (circled) value on the vertical line above each service is the average hours of that service received by children. The values above and below the average are the +2 and -2 standard deviations from the average and represent the range of hours that 95% of children received for that service type. The greater the range, the greater the variability in the hours that children received.

1.B.1.d. What is the relationship between the amount of services planned and the amount of services received?

Data elements and considerations

This question is about comparing the total amount of planned services with the total amount of received services for each service type for children with active IFSPs/IEPs. For this analysis, you will examine the total number of hours of each service planned for a child over a time period you choose compared with the total number of hours of service received during the same period.

Planned service data from IFSPs/IEPs may be in different formats or units than received services data from, for instance, a billing system. Make sure the data are in or converted to the same units (minutes/hours, daily/weekly/monthly) to allow for an accurate comparison. Your data system must have data on both planned and received services for the same time period for each child.

For this analysis, you must account for changes that occur to a child's IFSP/IEP during the chosen time period, as a child may have services added or removed, or the frequency or duration of services may change.

Data Element	Considerations
Child Identifier	There may be multiple instances of a single child ID, full name, or birth date, or a conflicting combination of those identifiers. Review these matches to confirm whether the data belong to the same child or whether the same ID was mistakenly assigned to multiple children.
Planned Service Start Date	If your data system does not provide a planned service amount for each child, you will need the planned service start date, along with the frequency and planned service end date or duration. If your data system does not have a planned service start date element, assume the planned start date is the same as the IFSP/IEP signature date.
Planned Service End Date	If your data system does not provide a planned service amount for each child, you will need the planned service end date or duration, along with the planned service start date and frequency. This element may be in your data system as "service end date." If your data system does not have a planned service end date element, assume the end date will be the same as the IFSP/IEP end date. For instance, if a child's IEP has physical therapy services planned to start in October and there is no specified end date, assume the planned service end date will be October of the next year.
Planned Service Type	You could decide to analyze a subset of service types. The number/percentage of children for some planned service types may be very small, so while you may include all services in your analysis, you can opt to report only on the most frequent planned services.
Planned Service Amount	You may need to use multiple data elements in your data system to calculate the planned service amount for each service. You may have planned service frequency, duration, and length associated with each service type for each child. For example, one child may have special instruction planned for 30 minutes, three times per week, for 6 months. You may decide to use a different unit such as hours.
Received Service Type	You may ultimately need to consider the services in which you are most interested. The number/percentage of children in some received service categories may be very small, so while you may include all services in your analysis, you can opt to report only on the most frequently received services.

Data Element	Considerations
Received Service Amount	This could be reported time (e.g., 1 hour) or a set unit of time for a particular service in minutes (e.g., a unit of service = 15-minute increment). You may decide to use a different unit.
Received Service Date	Use the received service date to identify the services that occurred during the chosen time period.

Steps for conducting the analysis

Prepare the dataset and review data

1. Choose the time period you will use for the analysis.
2. For each child with an active IFSP/IEP, pull a dataset containing:
   a. Planned and received service types and amounts, and
   b. Received service dates.

Conduct the analysis for planned service amounts

3. Filter the dataset using the planned service start date and planned service end date elements based on the chosen time period.
   a. Filter to include planned service start dates that are before or during the chosen period.
   b. Filter to include planned service end dates that are during or after the chosen period.
4. Calculate, for each child, the planned amount of each service type. Use available frequency, duration, and unit elements to produce a consistent metric for the amount (e.g., hour) that fits the chosen time period. In the following examples, special instruction is planned for 30 minutes, 3 times per week, for 6 months. The chosen period for considering all planned services is a 12-month period beginning in December. For instance:
   a. If all six months of planned special instruction completely coincide with the chosen time period, calculate the total planned service amount:

$$30\ \text{min} \times \frac{1\ hour}{60\ min} \times \frac{3\ services}{week} \times \frac{4\ weeks}{1\ month} \times\ (6\ months) = 36\ total\ planned\ hours$$

   b. If the timing of the planned special instruction does not completely overlap with the chosen 12-month time period, remove the amount of planned special instruction that does not overlap with the time period from the total planned amount. For example, if a child's special instruction services were planned to begin in October, but the chosen time period begins in December, you need to deduct the hours planned for the months of October and November (i.e., deduct two months from the total planned). The new equation shows a reduction of two months:

$$30\ \text{min} \times \frac{1\ hour}{60\ min} \times \frac{3\ services}{week} \times \frac{4\ weeks}{1\ month} \times\ (6 - 2\ months) = 24\ adjusted\ planned\ hours$$

   c. If the amounts of planned special instruction vary over the chosen time period, you will need to account for the variation. If a child's IEP is modified halfway through the chosen period of one year, you need to calculate planned services separately for each half. For example, in the

second half of the year, planned special instruction is modified to 15 minutes, 3 times a week, for 6 months. Calculate the hours planned for each half:

$$30\,\text{min} \times \frac{1\ hour}{60\ min} \times \frac{3\ services}{week} \times \frac{4\ weeks}{1\ month} \times\ (6\ months)$$
$$= 36\ total\ planned\ hours\ (December\ through\ May)$$

$$15\,\text{min} \times \frac{1\ hour}{60\ min} \times \frac{3\ services}{week} \times \frac{4\ weeks}{1\ month} \times\ (6\ months)$$
$$= 18\ total\ planned\ hours\ (July\ through\ November)$$

Then add the hours for each half:

$$18\ hours + 36\ hours = 54\ total\ planned\ service\ hours\ from\ December\ through\ November$$

Importantly, you must ensure all units of service (e.g., hours) are the same for each service.

5. Consolidate and organize the calculated data for each child into total hours of planned services by type, using a pivot table or manual grouping to show:
   a. Sum of planned services amounts for each service type, and
   b. Sum of number of children receiving that service type.
6. Check the total amounts and numbers of children for potential outliers, missing data, and data that are unclear or out of range.

Conduct the analysis for received service amounts

7. Filter the original dataset to exclude received service dates outside of your chosen time period.
8. Consolidate and organize the data for each child into total hours of received services by type, using a pivot table or manual grouping showing:
   a. Sum of received services amounts (e.g., minutes/hours) for each service type, and
   b. Sum of number of children receiving that service type.
9. Check the total amounts and numbers of children for potential outliers, missing data, and data that are unclear or out of range.

Conduct the analysis for planned vs. received service amounts

10. Out of the total amount of planned services, calculate the percentage of services received.

Example outputs and visualizations

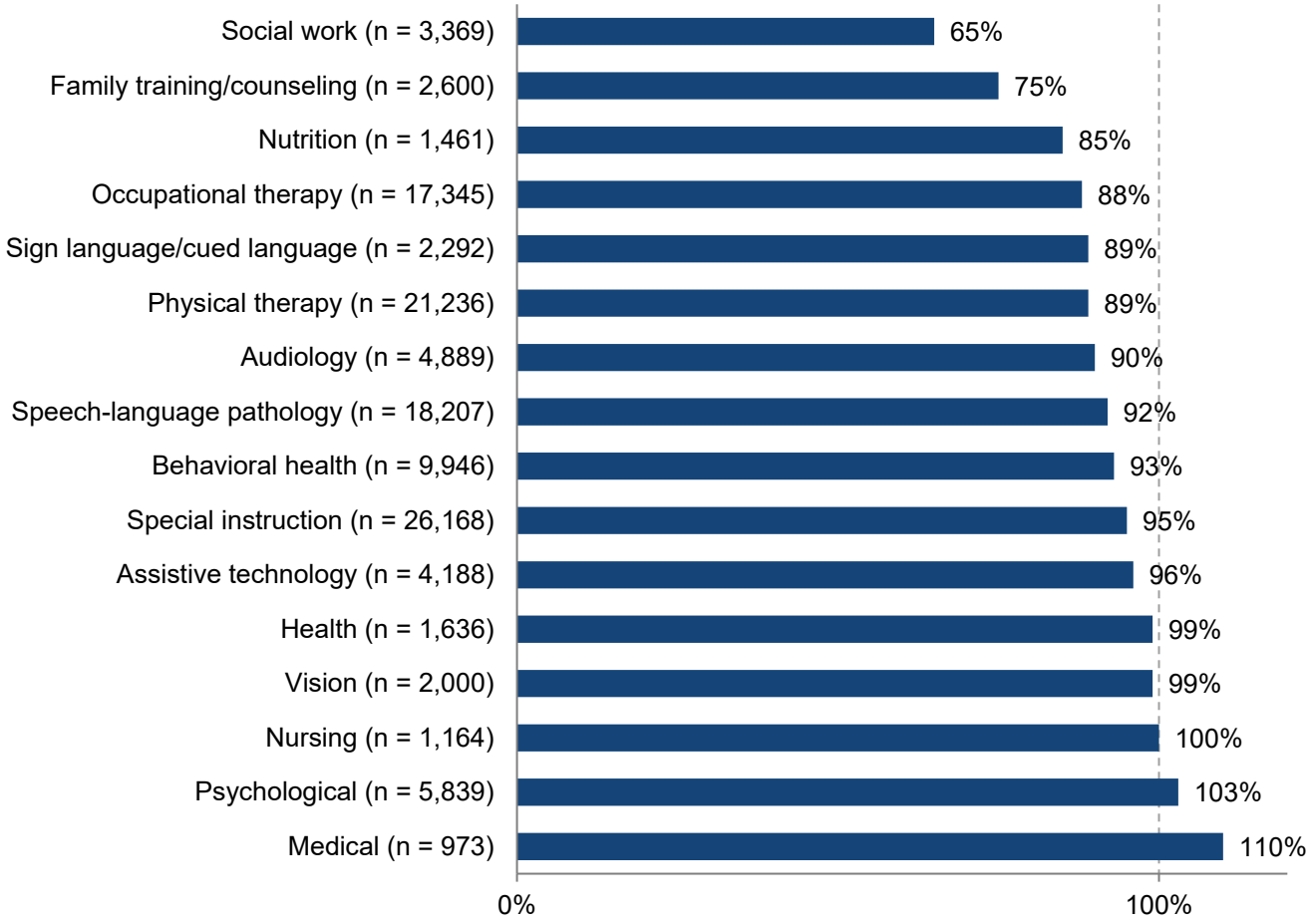
All tables and charts in this section use example data from an ECSE program to present information about the hours of services planned and received by type of service for children with active IEPs between January and December 2024.

Table d-1. Planned and Received Hours of Service and Number of Children Receiving Each Service in 2024 (*N* = 1,110)

Received Services Type	Total Hours of Planned Services	# of Children with Planned Service	Total Hours of Received Services	# of Children Receiving Service	% of Planned Hours Received
Assistive technology	4,020	60	3,859	60	96%
Audiology	4,400	100	3,960	98	90%
Behavioral health	9,250	125	8,603	125	93%
Family training/counseling	1,950	25	1,463	23	75%
Health	1,620	30	1,604	30	99%
Medical	1,070	10	1,177	10	110%
Nursing	1,164	12	1,164	12	100%
Nutrition	1,242	18	1,056	18	85%
Occupational therapy	15,264	212	13,432	212	88%
Physical therapy	18,900	180	16,821	180	89%
Psychological	6,014	62	6,194	61	103%
Sign language and cued language	2,040	20	1,816	20	89%
Social work	2,190	30	1,424	30	65%
Special instruction	24,860	220	23,617	220	95%
Speech-language pathology	16,750	250	15,410	250	92%
Transportation	0	0	0	0	0%
Vision	1,980	33	1,960	33	99%
Other	0	0	0	0	0%

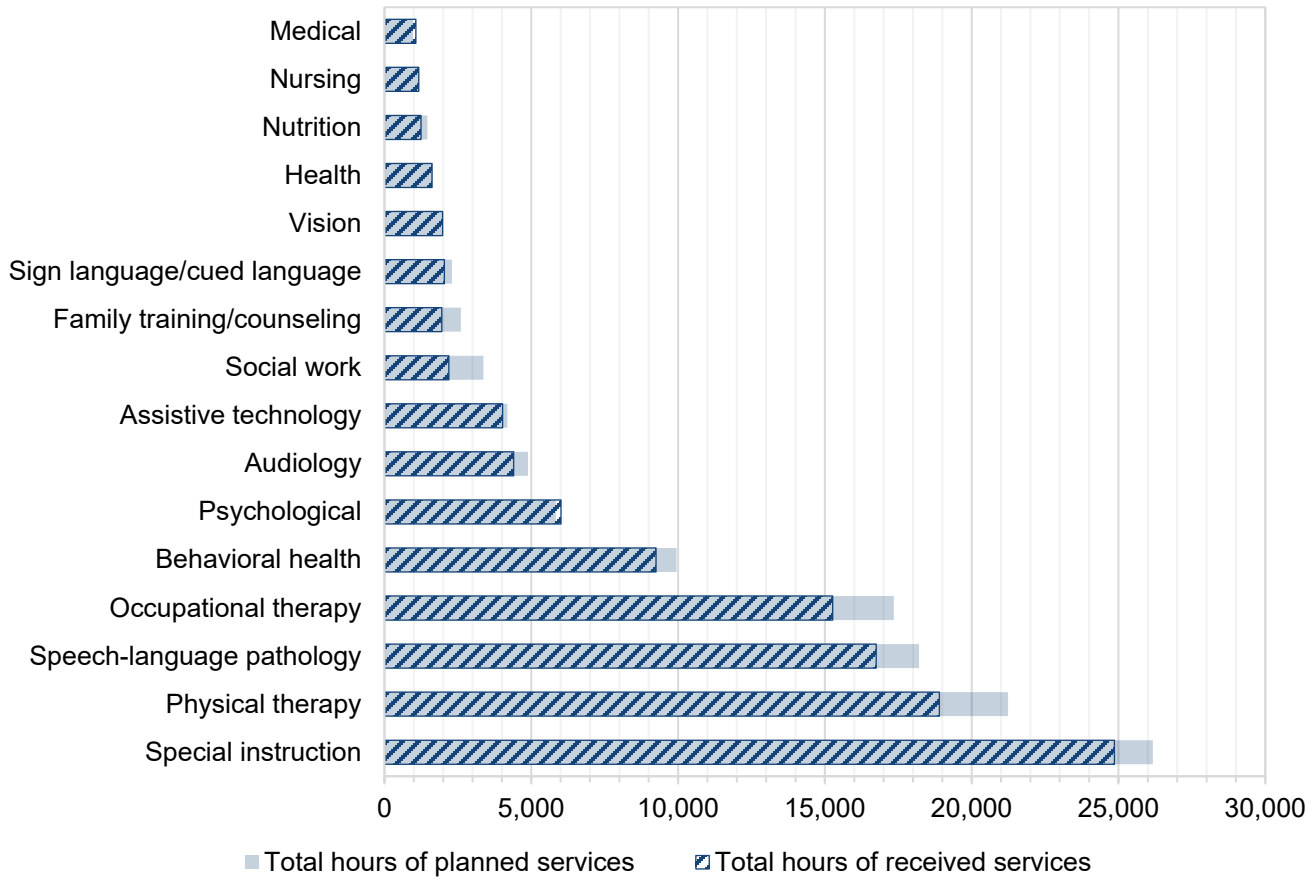
Charts d-1 and d-2 show different ways to present a comparison of the planned versus received service hours. Both charts represent a proportion where d-2 conveys the scale of planned versus received service amounts but is more complex.

Chart d-1. Percentage and Amount of Planned Service Hours Received by Service Type for Children in ECSE (*N* = 1,110) in 2024



Note. In some cases, children may have received more hours of service than were planned in their IEPs, which appear on the chart as greater than 100%.

Chart d-2. Total Hours of Planned Versus Received Service Hours by Service Type for Children in ECSE (*N* = 1,110) in 2024



Appendix. Crosswalk of Critical Question Data Elements with CEDS Elements (Version 14)

Critical Question Data Element	CEDS Data Element Name	CEDS Option Set	Specific Critical Questions
Child Identifier	Person Identifier		1.b.1.a 1.b.1.b 1.b.1.c 1.b.1.d
Planned Service Start Date	Individualized Program Planned Service Start Date		1.b.1.a 1.b.1.d
Planned Service End Date	Individualized Program Planned Service Duration	Daily Weekly Biweekly Monthly Bimonthly Quarterly Semiannually Annually Other	1.b.1.a 1.b.1.d
Planned Service Type	Early Childhood Services Offered	Assistive technology services Audiology services Behavioral health Family training/counseling services Health services Medical services Nursing services Nutrition services Occupational therapy Other Physical therapy Psychological services Service coordination Sign language and cued language services Social work services Special instruction Speech-language pathology services Transportation Vision services	1.b.1.a 1.b.1.c 1.b.1.d
Received Service Type	Early Childhood Services Received	Assistive technology services Audiology services Behavioral health Family training/counseling services Health services	1.b.1.b 1.b.1.c 1.b.1.d

Critical Question Data Element	CEDS Data Element Name	CEDS Option Set	Specific Critical Questions
		Medical services Nursing services Nutrition services Occupational therapy Other Physical therapy Psychological services Service coordination Sign language and cued language services Social work services Special instruction Speech-language pathology services Transportation Vision services	
Planned Service Amount	N/A		1.b.1.d
Received Service Date	Service Date		1.b.1.b 1.b.1.c 1.b.1.d
Received Service Amount	N/A		1.b.1.c 1.b.1.d

Note. N/A = not applicable.

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About Us

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To learn more about the DaSy Center, visit the DaSy Center website at https://www.dasycenter.org/.