

Title V Data Integration Use Case: Developmental Screening

In June 2015, AMCHP released [Resources for Title V Action Planning: Developmental Screening Strategies and Measures](#). This document articulates the importance of screening for healthy development to help identify potential delay areas for further evaluation and diagnosis and for reducing the likelihood of developing other delays.¹

As Title V programs strive to improve developmental screening and early identification, it becomes critical to have data to inform program decisions and strategically plan. This use case focuses on leveraging state ECIDS to provide insight into the state developmental screening landscape, including rates and results. The analysis can be customized for each Title V program allowing for an in-depth look into developmental screening data at the state or local level.

Use Case Questions

1. **How many children birth through age 5 are receiving a developmental screening using a parent-completed screening tool?**
2. **How many children birth through age 5 are achieving five-domain developmental health as demonstrated by a parent-completed developmental screening results?**

Analytic Considerations

The focus of this question is developmental screening outcomes. Therefore, all children included in the analysis will need to have received a developmental screening. As there may be many sources of developmental screening, decisions will need to be made on which parent-completed developmental screening Title V programs wish to review. For example, Title V programs may wish to analyze all screeners used within the state or may wish to look at outcomes by specific screeners such as the Ages and Stages Questionnaire, the Denver Developmental Screening Test, or the Battelle Developmental Inventory. If the Title V program wishes to have data on specific screeners (rather than all screeners), a list of these screeners must be provided to the ECIDS point of contact.

To work with developmental screener data, Title V programs must know which sources participating in the Early Childhood Integrated Data System (ECIDS) share data on developmental screening. Title V programs should also consider that children may have received multiple screenings from multiple sources. Title V programs will only be able to capture a unique count of children receiving developmental screening if the ECIDS assigns a unique identifier.

Title V programs will need to determine how they will use the data to determine how to pull the data. For example, is the Title V program interested in data from the total number of screenings done in a specified time or the total number of children receiving at least one screening in a specified time? Or perhaps only data from the most recent screening are needed. Once Title V

¹ [Resources for Title V Action Planning: Developmental Screening Strategies and Measures](#) (June 2015)

programs have determined their developmental screening questions, they can complete a use case aligned with their specific question.

Data Set

The data set for this analysis includes all children birth through age 5 receiving a developmental screening using a parent-completed screening tool. As there are multiple questions in this use case, the analysis for each question will be broken down individually.

Question 1: How many children birth through age 5 are receiving a developmental screening using a parent-completed screening tool?

The recommended data elements for this analysis are listed in the table below. For states using the Common Education Data Standards (CEDS), the link to the CEDS element has been provided.

Data Elements – Developmental Screening Question 1



Click the hyperlinks in the table to see more information about the data elements in CEDS. The links will take you to the individual elements and do not require a CEDS login to access. Where available, links to CEDS are included. Where not available, data elements that are likely to exist in Title V data systems have been suggested. These elements will be submitted to CEDS for consideration.

Variable	Data Element Choices	Element Definition	Option Set	Considerations
Child	Child Identifier	A unique number or alphanumeric code assigned to a child by a school, school system, state, or other agency or entity.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
Child Name	First Name	The full legal first name given to a person at birth, baptism, or through legal change.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
	Middle Name	A full legal middle name given to a person at birth, baptism, or through legal change.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
	Last or Surname	The full legal last name borne in common by members of a family.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
	Generation Code or Suffix	An appendage, if any, used to denote a person's generation in his family (e.g., Jr., Sr., III).	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.

Variable	Data Element Choices	Element Definition	Option Set	Considerations
Child Age	Birthdate	The year, month, and day on which a person was born.		Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
Developmental Screener Used	Assessment Title	The title or name of the assessment.	Alphanumeric	
	Assessment Short Name	An abbreviated title for an assessment.	Alphanumeric	
	Assessment Identifier	A unique number or alphanumeric code assigned to an assessment by a school, school system, state, or other agency or entity. This may be the publisher identifier.	Alphanumeric	
Date Screener was Completed	Assessment Session Actual End Date Time	Date and time the assessment ended.		The date of screening is compared to the child's date of birth to determine the age of the child at the time of screening.
	Well Child Screening Received Date	The year, month, and day of a well child visit.		The date of well-child screening is compared to the child's date of birth to determine if the child was birth through the age of five at the time of screening.

Steps for Analysis – Developmental Screening Question 1

- a. Identify the timeframe for analysis. For example, you may wish to look at the data by calendar or fiscal year.
- b. Identify the geographic boundary for analysis. For example, you may wish to look at the data by county or ZIP code.
- c. After applying the timeframe and geographic boundary filters, pull the subset of children birth through age 5 receiving a developmental screening in the specified timeframe and geographic boundary.
- d. If the Title V program would like the data broken down by age categories, collapse the data set into age categories. For example, Birth through 11 months, 12 months through 23 months, 24 months through 35 months, 36 months through 47 months, 48 months through 59 months, and 60 through 71 months.
- e. Calculate the number of children receiving a developmental screening using a parent-completed screening tool for each age category by comparing the date the developmental screener was completed to the child's date of birth.
- f. Check for data quality issues such as outliers or missing data.
- g. Calculate the percentage by dividing the total number of children screened using a parent-completed screening tool by the total number of children birth through age 5 in the identified timeframe and geographic boundary. Multiply this result by 100 to get the total percentage. If the Title V program broke the data into age categories, divide the total number of children screened using a parent-completed screening tool for each age category by the total number of children screened using a parent-completed screening tool in the identified timeframe and geographic boundary. Multiply this result by 100 to get the total percentage.

Data Visualization – Developmental Screening Question 1

Effective data visualization is critical for conveying the Title V program message and telling your story. When looking at the data provided by ECIDS, what do you notice? What are the patterns and/or trends? These questions will help Title V programs identify the story the data tell. Title V programs should visualize data differently depending on the intended audience. Some examples for visualizing data have been provided below.

Consider this example using fictitious data:

2016 Total Children Birth Through Age 5 in “Any State USA”		N=73,421
	N	%
2016 children birth through age 5 receiving a developmental screening using a parent-completed screening tool	14,015	19%
2016 children birth through age 5 not receiving a developmental screening	59,406	81%

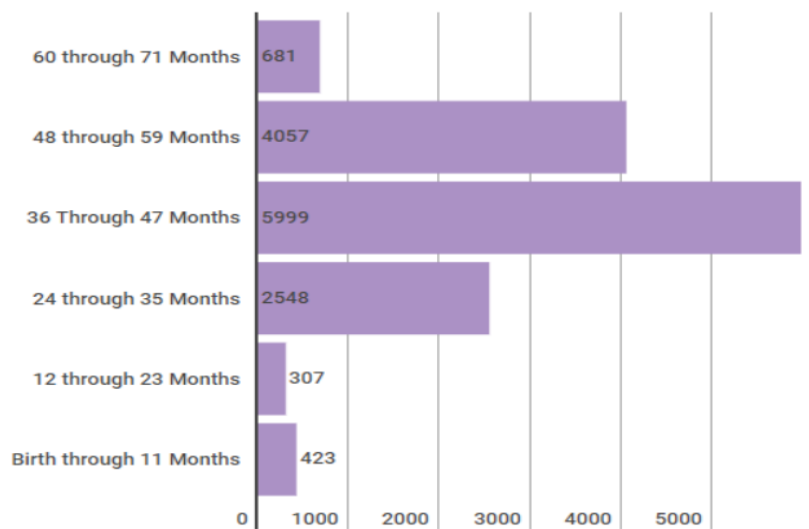
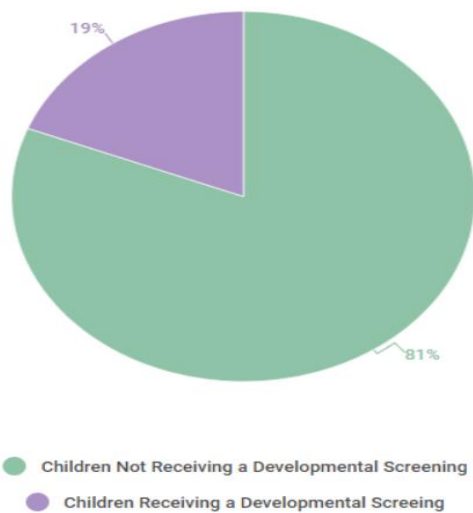
If the Title V program requested the ECIDS break the data down by age categories, consider this example using fictitious data:

2016 Total Children Birth Through Age 5 in “Any State USA” that Received a Developmental Screening in 2016		N=14,015
	N	%
Birth through 11 months	423	3%
12 months through 23 months	307	2%
24 months through 35 months	2,548	18%
36 months through 47 months	5,999	43%
48 months through 59 months	4,057	29%
60 through 71 months	681	5%

Title V programs may wish to visualize the data as:

In 2016, 19% of the Children in the State Received a Developmental Screening Using a Parent-Completed Screening Tool

Of the 73,421 children birth to five in the state, 14,015 have received a developmental screening using a parent-completed screening tool.



2016 children birth through 5 receiving developmental screening categorized by age

Or, Title V programs may wish to visualize the data as:

Possible Actions Based on Data – Developmental Screening Question 1

As Title V programs have a more holistic view of states' developmental screening activities, the state will be able to use data to identify areas with low screening rates and areas with high rates of children not meeting their age-appropriate milestones. The data will help Title V programs target resources to areas with barriers and challenges to screening, and disseminate successful practices for wide-spread implementation. As developmental screening only shows children at-risk of having or developing a delay, the data can also be used to identify children needing resources and referrals to community programs and services.

Question 2: How many children birth through age 5 are achieving five-domain developmental health as demonstrated by parent-completed developmental screening results?

The recommended data elements for this analysis are listed in the table below. For states using the Common Education Data Standards (CEDS), the link to the CEDS element has been provided.

Data Elements – Developmental Screening Question 2



Click the hyperlinks in the table to see more information about the data elements in CEDS. The links will take you to the individual elements and do not require a CEDS login to access. Where available, links to CEDS are included. Where not available, data elements that are likely to exist in Title V data systems have been suggested. These elements will be submitted to CEDS for consideration.

Variable	Data Element Choices	Element Definition	Option Set	Considerations
Child	Child Identifier	A unique number or alphanumeric code assigned to a child by a school, school system, state, or other agency or entity.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
	First Name	The full legal first name given to a person at birth, baptism, or through legal change.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
	Middle Name	A full legal middle name given to a person at birth, baptism, or through legal change.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
	Last or Surname	The full legal last name borne in common by members of a family.	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.

Variable	Data Element Choices	Element Definition	Option Set	Considerations
	<u>Generation Code or Suffix</u>	An appendage, if any, used to denote a person's generation in his family (e.g., Jr., Sr., III).	Alphanumeric	Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
Child Age	<u>Birthdate</u>	The year, month, and day on which a person was born.		Although the questions in this analysis can be reported on aggregately, child information is needed to create the data set. After data have been pulled, children's personally identifiable data may be stripped.
Developmental Screener Used	<u>Assessment Title</u>	The title or name of the assessment.	Alphanumeric	
	<u>Assessment Short Name</u>	An abbreviated title for an assessment.	Alphanumeric	
	<u>Assessment Identifier</u>	A unique number or alphanumeric code assigned to an assessment by a school, school system, state, or other agency or entity. This may be the publisher identifier.	Alphanumeric	
Developmental Assessment Result	<u>Child Developmental Screening Status</u>	The result of a brief standardized screening tool aiding in the identification of children at risk of a developmental delay/disorder.	No further evaluation needed	Although there may be many results of a developmental screener, this question is interested in looking at how many were screened and how many are achieving five-domain developmental health. Therefore, the only option needed under "Child Developmental Screening Status" would be "No further evaluation needed".
	<u>Developmental Evaluation Finding</u>	Child developmental delay/disability determined by procedure used by appropriate qualified personnel.	None - No finding was determined by the procedure used by appropriate qualified personnel. No delay detected - No child developmental delay/disability was identified by procedure used by appropriate qualified personnel.	Although there may be many developmental evaluation findings, this question is interested in looking at how many were screened and how many are achieving five-domain developmental health. Therefore, the only options needed under "Developmental Evaluation Finding" would be "None" and "No delay detected".
	<u>Assessment Result</u>	A statement intended for use by education professionals, using professional terminology, to interpret learner needs based	Alphanumeric	

Variable	Data Element Choices	Element Definition	Option Set	Considerations
	<u>Diagnostic Statement</u>	on the scored/evaluated portion of an assessment. This statement may inform Descriptive Feedback given to the learner.		
	<u>Assessment Result Score Value</u>	A meaningful raw score, derived score, or statistical expression of the performance of a person on an assessment. The type of result is indicated by the Assessment Score Metric Type element. The results can be expressed as a number, percentile, range, level, etc. The score relates to all scored items or a sub test scoring one aspect of performance on the test. This value may or may not correspond to one or more Performance Levels.	Alphanumeric	
Date Screener was Completed	<u>Assessment Session Actual End Date Time</u>	Date and time the assessment ended.		The date of screening is compared to the child's date of birth to determine the age of the child at the time of screening.
	<u>Well Child Screening Received Date</u>	The year, month, and day of a well-child visit.		The date of well-child screening is compared to the child's date of birth to determine if the children was birth through the age of 5 at the time of screening.

Steps for Analysis – Developmental Screening Question 2

- a. Identify the timeframe for analysis. For example, you may wish to look at the data by calendar or fiscal year.
- b. Identify the geographic boundary for analysis. For example, you may wish to look at the data by county or ZIP code.
- c. After applying the timeframe and geographic boundary filters, pull the subset of children birth through age 5 receiving a developmental screening in the specified timeframe and geographic boundary.
- d. If the Title V program would like the data broken down by age categories, collapse the data set into age categories. For example, birth through 11 months, 12 months through 23 months, 24 months through 35 months, 36 months through 47 months, 48 months through 59 months, and 60 through 71 months.
- e. Calculate the number of children receiving a developmental screening using a parent-completed screening tool for each age category by comparing the date the developmental screener was completed to the child's date of birth.
- f. Of the children identified in step e., calculate the number of children achieving five-domain developmental health as demonstrated by the parent-completed developmental screening results. (To be counted, the child must be meeting expectations in all developmental health categories assessed).
- g. Check for data quality issues such as outliers or missing data.
- h. Calculate the percentage by dividing the total number of children achieving five-domain developmental health by the total number of children screened using a parent-completed developmental screening in the identified timeframe and geographic boundary. Multiply by 100 for a total percentage. If the Title V program broke the data into age categories, divide the total number of children achieving five-domain developmental health in each age range by the total number of children screened in the identified timeframe and geographic boundary. Multiply by 100 for a total percentage.

Data Visualization – Developmental Screening Question 2

Effective data visualization is critical to convey the Title V program message and to tell your story. When looking at the data provided by ECIDS, what do you notice? What are the patterns and/or trends? These questions will help Title V programs identify the story the data tell.

Consider this example using fictitious data:

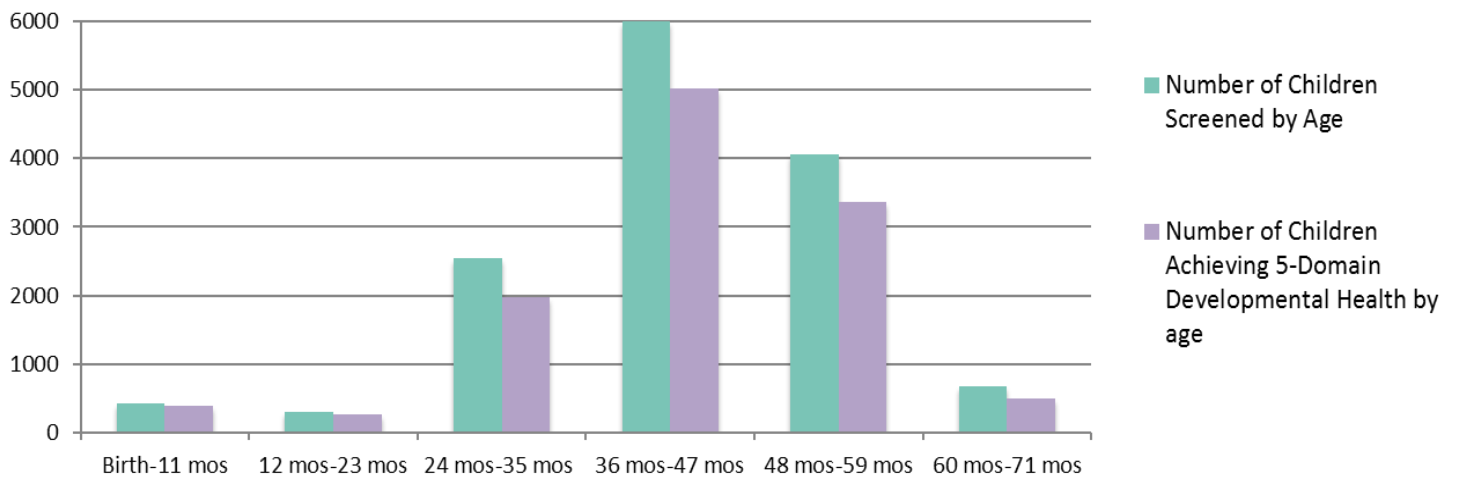
2016 Total Children Birth Through Age 5 in “Any State USA”		N=73,421
	N	%
2016 children birth through age 5 receiving a developmental screening using a parent-completed screening tool	14,015	19%
Of the number screened in 2016, the children birth through age 5 achieving five-domain developmental health as demonstrated by a parent-completed developmental screening results	11492	82%

If the Title V program requested the ECIDS break the data down by age categories, consider this example using fictitious data:

2016 Total Children Birth Through Age 5 in “Any State USA” Achieving Five-domain Developmental Health			N=11,492
	Number of Children Screened by Age	Number of Children Achieving Five-Domain Developmental Health by age	% of Children Achieving Five-Domain Developmental Health by Age
Birth through 11 months	423	386	91%
12 months through 23 months	307	256	83%
24 months through 35 months	2,548	1,979	78%
36 months through 47 months	5,999	5,019	84%
48 months through 59 months	4,057	3,360	83%
60 through 71 months	681	492	72%

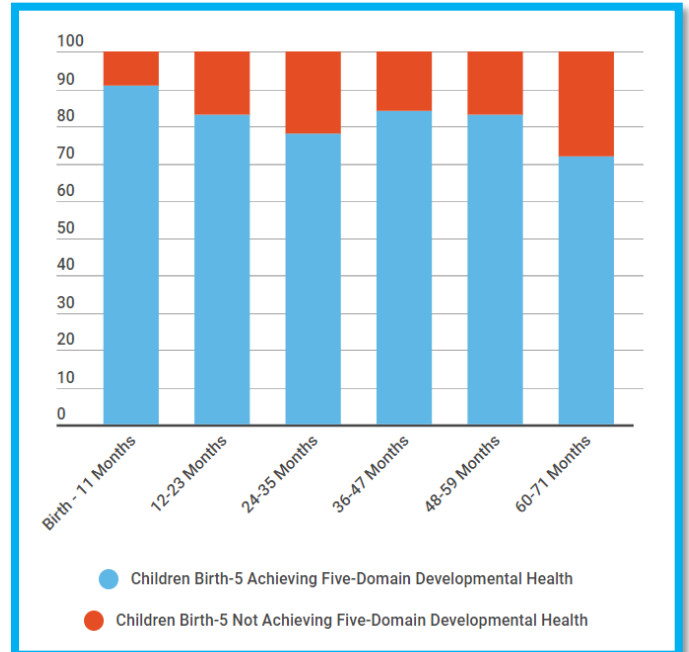
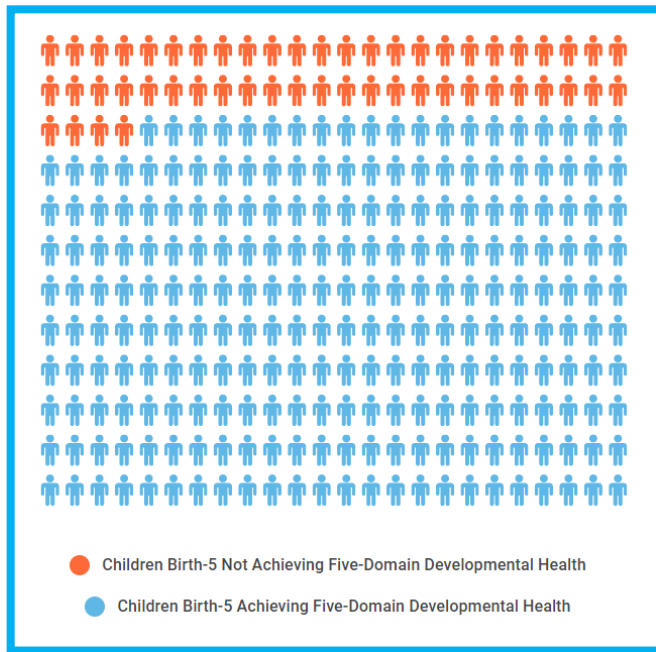
Title V programs may wish to visualize the data as:

Number of Children Screened by Age Achieving 5-Domain Developmental Health



Or, Title V programs may wish to visualize the data as:

In 2016, 82% of the Children in the State Birth through Five Screened Using a Parent-Completed Tool Achieved Five-Domain Developmental Health



Possible Actions Based on Data-Developmental Screening Question 2

As Title V programs have a more holistic view of states' developmental screening activities, the state will be able to use data to identify areas with low screening rates and areas with high rates of children not meeting their age-appropriate milestones. The data will help Title V programs target resources to areas with barriers and challenges to screening, and disseminate successful practices for wide-spread implementation. As developmental screening only shows children at risk of having or developing a delay, the data can also be used to identify children needing resources and referrals to community programs and services.