ANALYZING CHILD OUTCOMES DATA FOR PROGRAM IMPROVEMENT: A GUIDANCE TABLE

Lauren Barton, Cornelia Taylor, Christina Kasprzak, Kathleen Hebbeler, Donna Spiker, Lynne Kahn

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The Early Childhood Outcomes Center

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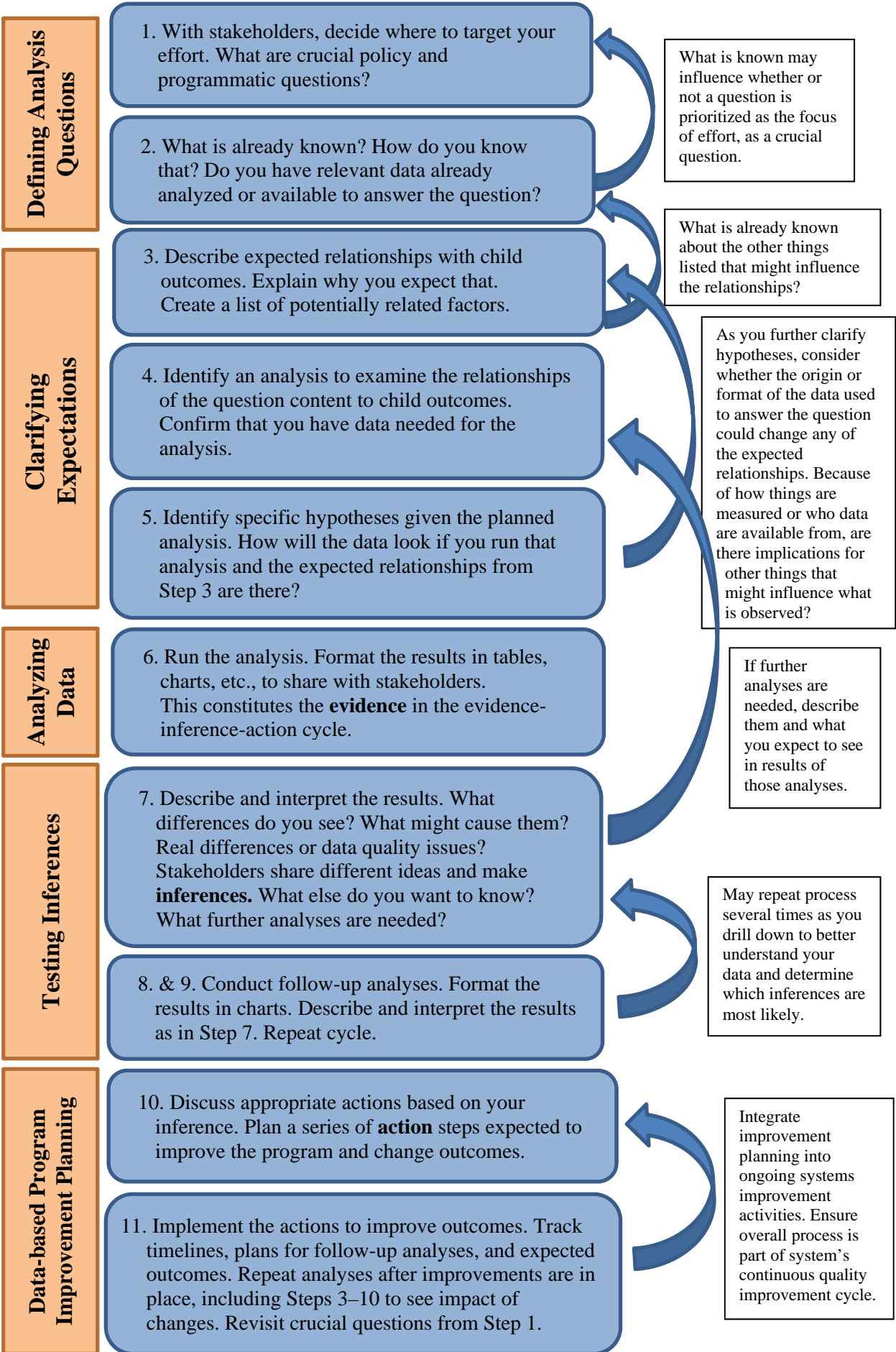
This guidance table is a tool to help identify key issues, questions, and approaches for analyzing and interpreting data on outcomes for young children with disabilities. The tool outlines a series of steps related to defining analysis questions, clarifying expectations, analyzing data, testing inferences, and conducting data-based program improvement planning. It is best used in combination with other resources or as a point of reference for a group working with technical assistance providers or others who have experience analyzing and interpreting data. States will benefit from using the tool as a guide and individualizing specific content based on the data they have available and the specific issues that are priority interests or focal areas for program improvement. **We encourage you to contact the ECO Center or the outcomes team of the ECTA Center when you begin to use this tool**. Technical assistance providers at those centers will be happy to help identify additional resources, connect you with others engaged in a similar process, and provide more individualized support in planning and conducting data analysis and interpretation activities.

Steps in Using Data for Program Improvement

The guidance table presents some key questions to consider at important points in the process of using data for program improvement. They are intended to support group discussion and decision-making and to serve as examples of the types of questions to be considered. In most cases, the process of using data is an iterative one, proceeding in a series of steps that sometimes inform earlier steps. The steps are described below and depicted in the figure that follows.

- **Step 1.** Work with stakeholders to decide where to target your effort. What are your crucial policy and programmatic questions? What do you most want to know to make decisions about services and to improve the program? The table provides a few examples of potential questions from many possible alternatives. Include a group of stakeholders in discussions and jointly describe a specific question that is of crucial interest in your state.
- **Step 2.** Identify what is already known about the question and what other information is important to find out. Do you have relevant data already analyzed about this question, or are data available to answer it? What else is known about the question and how was that established?
- **Step 3.** Describe expected relationships between the question content and child outcomes. What are possible related factors that might influence the relationship of question content and child outcomes? Keep a list of potentially related factors to consider later as you drill down further into the data.
- **Step 4.** Identify an analysis that provides information about the relationships between the question content and child outcomes. It is important to define the specifics of the analysis approach and key decisions and to ensure that you have the data available to run the proposed analyses. Technical assistance providers can identify resources or give you individualized assistance with this step.
- **Step 5.** With the specific analysis approach in mind, describe the expected results. Describe the specific hypotheses you have for how the data will look given the detailed analyses that are planned. This elaborates on the ideas from Step 3, although specific data decisions and analysis approaches sometimes will influence what results are expected.
- **Step 6.** Run the analysis and format the data in charts, graphs, and/or tables for review. This constitutes the **evidence** in the evidence-inference-action cycle of interpreting and using data.
- **Step 7.** Describe the results. What stands out? What differences do you see between groups? Begin to interpret the results. Are the differences real, or are they likely to reflect a problem with the quality of your data? What could explain them? What might cause them? These are **inferences**. Stakeholders may disagree about the meaning of the results or the origin of observed differences; several likely inferences may emerge. Do you have additional information to rule out some inferences? What else do you want to know? What further analyses are needed?
- **Step 8.** Conduct follow-up analysis as needed. Format the data in charts, graphs, and/or tables to review.
- **Step 9.** Describe and interpret the results as in Step 7. Repeat the cycle until support for some inferences begins to emerge.
- **Step 10.** Discuss appropriate actions based on your inference about the data (**action**). Plan a series of steps expected to improve the program and ultimately change the data. Some action plans may involve steps to improve data quality. Others focus on changes in program practices or system changes.
- **Step 11.** Implement the action plan, including tracking timelines and plans for running follow-up analyses that track changes. Repeating Steps 3–10 at a later time is critical to see system improvements and the effect on outcomes. Eventually, reassess the nature of the crucial questions to guide your work and ensure that the overall process becomes part of the system's continuous quality improvement cycle.

Defining Analysis Questions

1. With stakeholders, decide where to target your effort. What are crucial policy and programmatic questions?

2. What is already known? How do you know that? Do you have relevant data already analyzed or available to answer the question?

What is known may influence whether or not a question is prioritized as the focus of effort, as a crucial question.

Clarifying Expectations

3. Describe expected relationships with child outcomes. Explain why you expect that. Create a list of potentially related factors.

What is already known about the other things listed that might influence the relationships?

4. Identify an analysis to examine the relationships of the question content to child outcomes. Confirm that you have data needed for the analysis.

5. Identify specific hypotheses given the planned analysis. How will the data look if you run that analysis and the expected relationships from Step 3 are there?

As you further clarify hypotheses, consider whether the origin or format of the data used to answer the question could change any of the expected relationships. Because of how things are measured or who data are available from, are there implications for other things that might influence what is observed?

Analyzing Data

6. Run the analysis. Format the results in tables, charts, etc., to share with stakeholders. This constitutes the **evidence** in the evidence-inference-action cycle.

If further analyses are needed, describe them and what you expect to see in results of those analyses.

Testing Inferences

7. Describe and interpret the results. What differences do you see? What might cause them? Real differences or data quality issues? Stakeholders share different ideas and make **inferences.** What else do you want to know? What further analyses are needed?

8. & 9. Conduct follow-up analyses. Format the results in charts. Describe and interpret the results as in Step 7. Repeat cycle.

May repeat process several times as you drill down to better understand your data and determine which inferences are most likely.

Data-based Program Improvement Planning

10. Discuss appropriate actions based on your inference. Plan a series of **action** steps expected to improve the program and change outcomes.

11. Implement the actions to improve outcomes. Track timelines, plans for follow-up analyses, and expected outcomes. Repeat analyses after improvements are in place, including Steps 3–10 to see impact of changes. Revisit crucial questions from Step 1.

Integrate improvement planning into ongoing systems improvement activities. Ensure overall process is part of system's continuous quality improvement cycle.

Analyzing Child Outcomes Data for Program Improvement: Guidance Table

1. Does our program serve some children more effectively than others?			
Defining Analysis Questions	**Clarifying Expectations**	**Analyzing Data**	**Describing and Interpreting Results**

1. Does our program serve some children more effectively than others?
   a. Do children with different racial/ethnic backgrounds have similar outcomes?
   b. Do dual-language learners (DLL) have similar outcomes as monolingual English-speaking children? Do outcomes vary for DLL with different primary languages (e.g., Spanish, Mandarin)?
   c. Do children with different disabilities show different patterns of growth? Is the pattern consistent with the nature of the children's disability? How much variation in growth is there for children with the same or similar disabilities?
 	
Extensions…Identify other differences using specific characteristics of interest from data available.
	What do you expect to see? Why?	1. Compare outcomes for children in different subgroups:
		   a. Different child ethnicities/races (e.g., for each outcome, examine whether there are higher summary statements, progress categories, entry and/or exit ratings for children of different racial/ethnic groups).
		   b. Different child language groups (e.g., DLL vs. single language; then repeat with English only vs. Spanish, Mandarin, Vietnamese, other specific child languages).
		   c. Different types of disabilities.
			1. Where are there notable differences between groups of children?
			2. Are average differences caused by a few outliers?
			3. Are there other potential explanations for differences? What else do you need to know more about?
			4. Do the data support what you expected to see?
			5. Are there missing data? Does the amount or pattern of missing data suggest that the child outcomes data for one or more groups might not be accurate for the entire group?
			6. Given differences observed and inferences that are emerging, what are next steps for follow-up analysis? What are next steps for taking action? After taking these steps, what do you expect will happen? How will that be reflected in the data?
			7. What analyses should be repeated after you have taken specific action steps?

Example figure that stakeholders might review from data analysis on question 1a: Do children with different race/ethnicity backgrounds have similar outcomes?

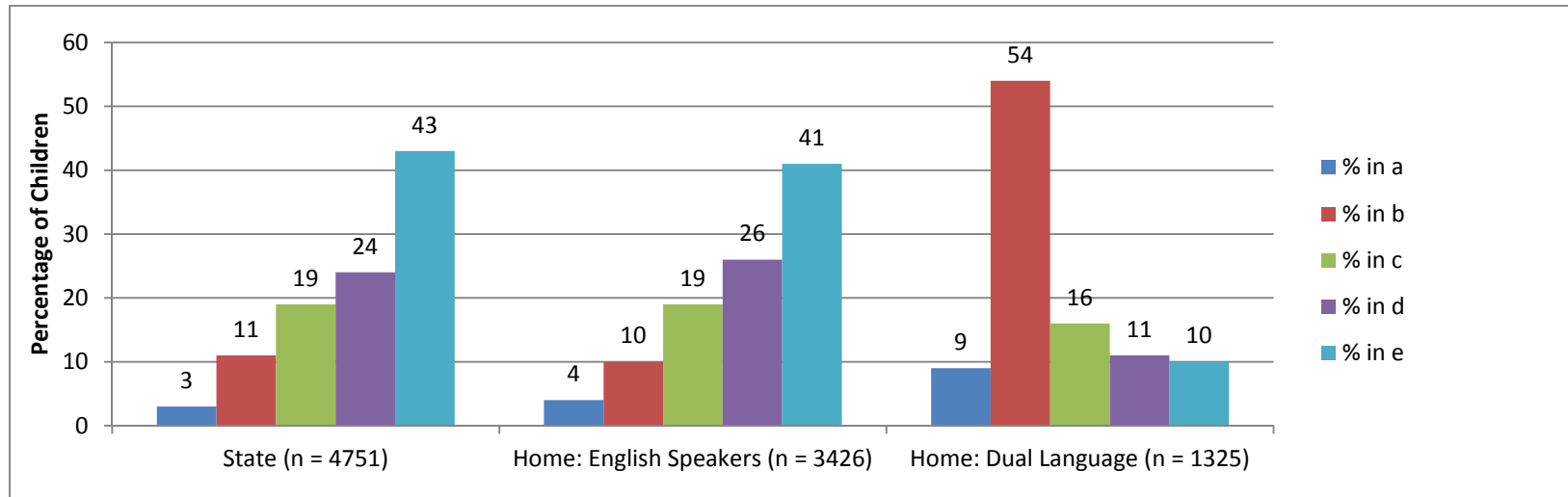Outcome 1: Summary Statements by Child's Race/Ethnicity
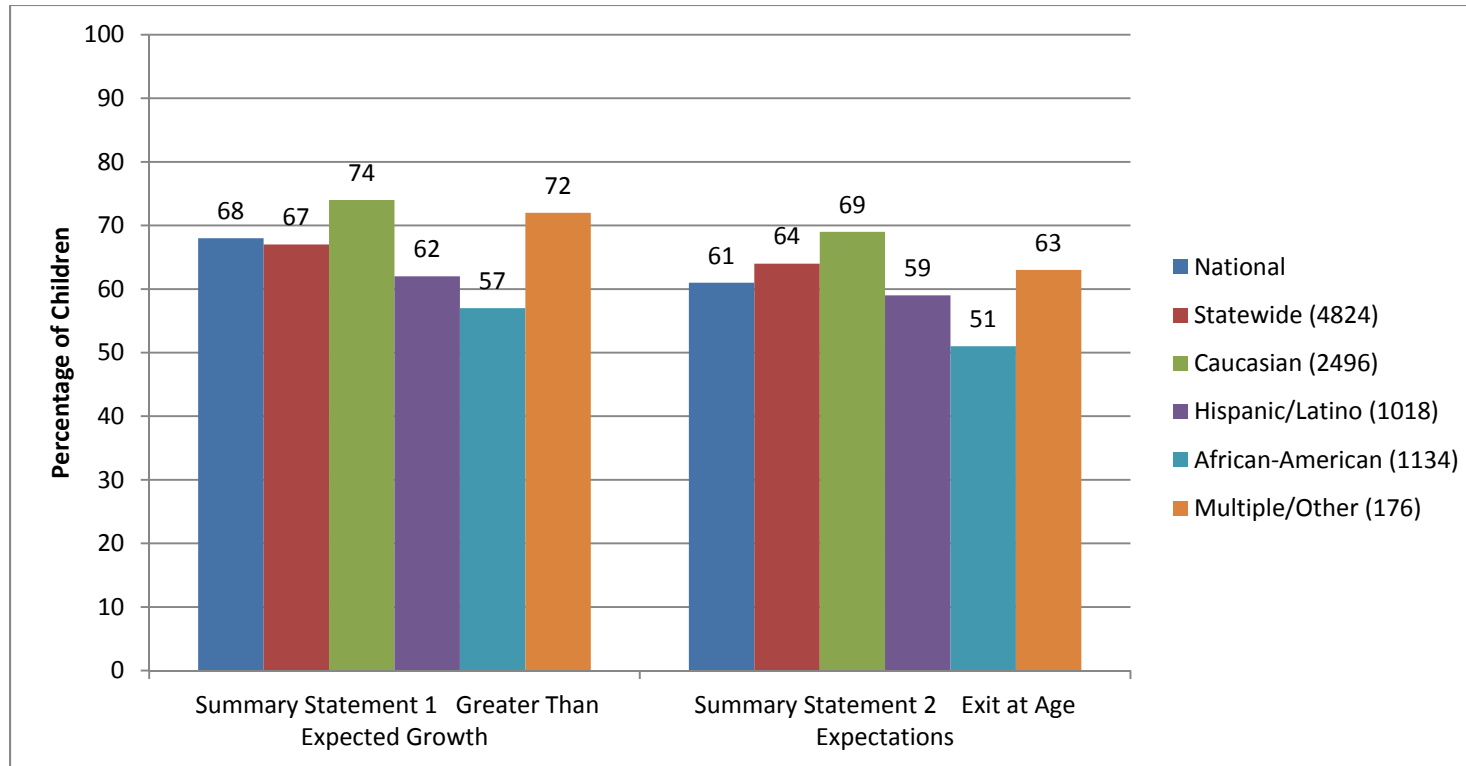
Other ideas: Repeat for each outcome. Look at progress categories for these groups. If using the Child Outcome Summary process, review entry 1-7 ratings and/or exit 1-7 ratings for these groups. Examine information in a data table format to review specific numbers. Consider other variables that might be related as you consider potential explanation for differences, such as type of disability, amount of missing data for each group (e.g., at entry and in matched entry/exit set relative to state enrollment, compared with other groups), age at program entry, length of time in program, referral source, and other demographic characteristics of the child such as gender and language spoken.

2. Does our program serve children in families with specific characteristics more effectively than others?			
Defining Analysis Questions	**Clarifying Expectations**	**Analyzing Data**	**Describing and Interpreting Results**

2. Does our program serve children in families with specific characteristics more effectively than others? Do outcomes differ for
  a. Children living in homes where parents speak a language other than English primarily or in dual-language households and children in monolingual English-speaking families? Or for groups children from homes where parents speak different primary languages (e.g., Spanish, Mandarin, Hmong)?
  b. Children living with parents who have higher levels of education and children in families with less parental education?
  c. Children from families with a single parent, a two-parent family, and an extended family home environment?
  d. Children in low-income homes and children in higher income home environments?
  e. Children living in families with high versus low cost-share/co-pay requirements for services?
 	
Extensions…Identify differences using specific family/environmental characteristics of interest from data available.
	What do you expect to see? Why?	2. Compare child outcomes for different groups of families:
		  a. Different parental language groups
		  b. Different parental educational backgrounds
		  c. Families with different structural characteristics (e.g., two-parent, single-parent, or extended families; only child vs. with siblings)
		  d. Different income levels or indicators of poverty or health insurance type
		  e. Families with different co-pay or cost-sharing responsibilities
			1. Where are there notable differences in the outcomes for children from families with different characteristics?
			2. Are differences caused by a few outliers?
			3. Are there other potential explanations for differences? What else do you need to know more about?
			4. Do the data support what you expected to see?
			5. Are there missing data? Does the amount or pattern of missing data suggest that the child outcomes data for one or more groups might not be accurate for the entire group?
			6. How does this information relate to what is known about family outcomes?
			7. Given differences observed and inferences that are emerging, what are next steps for follow-up analysis? What are next steps for taking action? After taking these steps, what do you expect will happen? How will that be reflected in the data?
			8. What analyses should be repeated after you have taken specific action steps?

Example figure that stakeholders might review for question 2a: Do outcomes differ for children living in families where parents speak a language other than English primarily compared with families with dual languages and monolingual English-speaking families?

Knowledge and Skills Outcome: Progress Category Information Statewide for Children from Monolingual English-Speaking Families and for Dual-Language Families

Progress Categories for Children by Primary Language Family Speaks
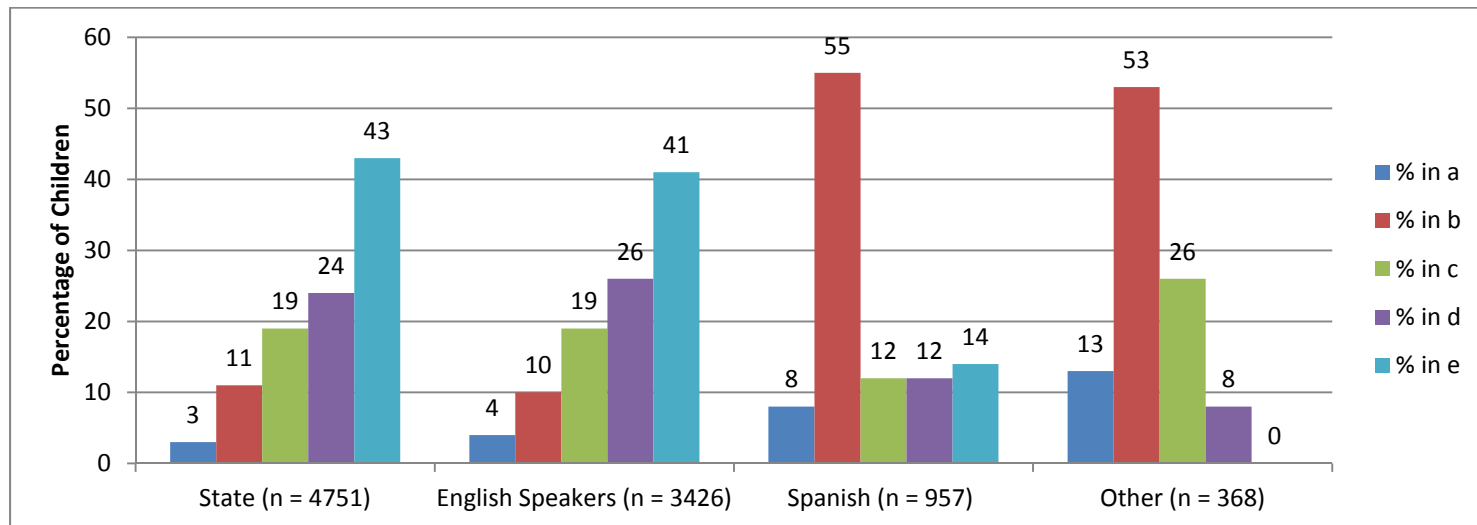
Other ideas: Repeat for each outcome. Look at summary statements for these groups. If using Child Outcome Summary process, review entry 1-7 ratings for these groups. Examine information in data table form to review specific numbers. Consider other possibly related variables, such as length of time in United States, language spoken by child, type of disability, and amount of missing data for each group (e.g., at entry and in matched entry/exit set relative to state enrollment) and compare them across groups.
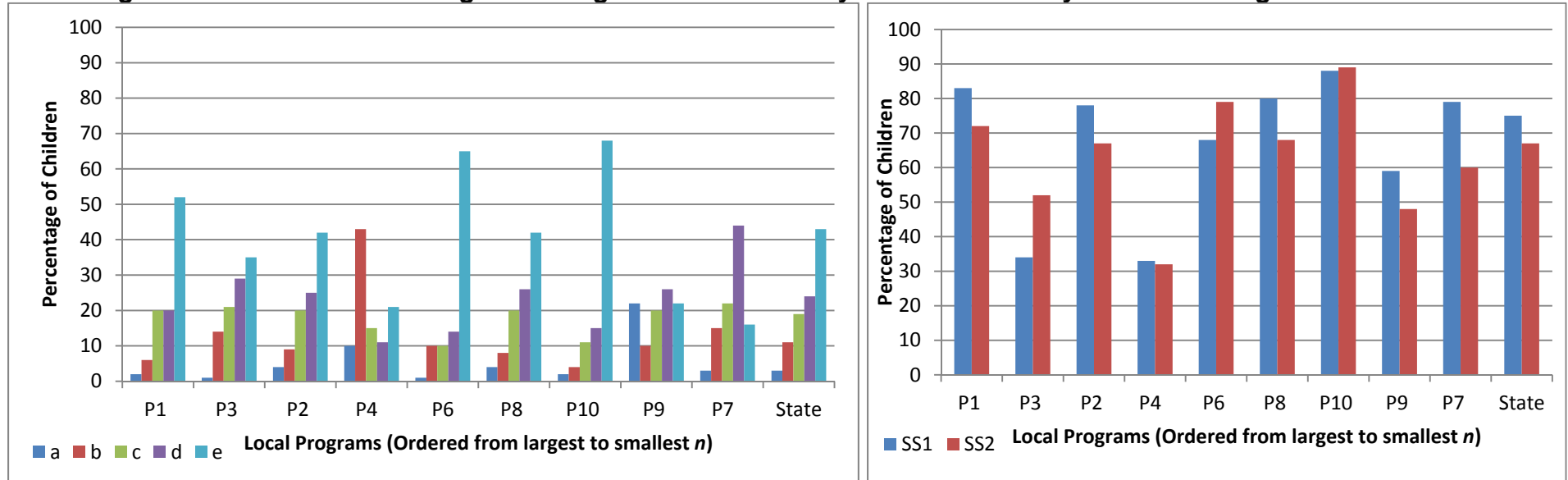
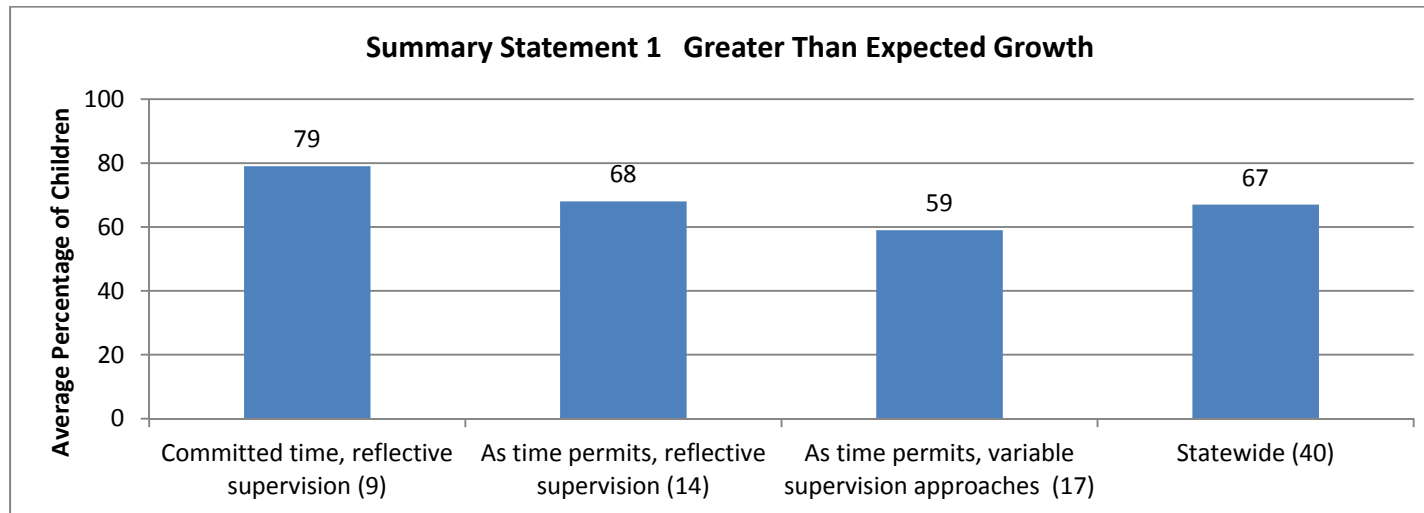| 3. Do child outcomes differ across local programs with different characteristics?			
Defining Analysis Questions	**Clarifying Expectations**	**Analyzing Data**	**Describing and Interpreting Results**

3. Do child outcomes differ across local programs?
  a. Do programs with higher overall quality show better child outcomes? (This requires a measure of quality such as ranking by coordinators/ monitors or QRIS system ratings.)
  b. Do programs with more experienced, well-trained staff produce better child outcomes?
  c. Do programs with more experienced leadership and supervision practices produce better child outcomes?
  d. Do programs that more regularly meet compliance indicators produce better child outcomes?
  e. Do programs serving children with different types of disabilities show different child outcomes?
 	
Extensions…Identify differences in outcomes for programs that have different characteristics or serve different populations based on data available.
	What do you expect to see? Why?	3. Look first at all programs side by side on child outcomes to see whether there are differences across them.
		
		Then consider how program features relate to outcomes. One approach would be to rank-order or group (high, medium, low) local programs on a specific characteristic like those described in a–e and compare their summary statements or progress categories side by side. Another approach would be to rank-order or group programs based on high, medium, or low outcomes data. Examine and compare key characteristics of quality (e.g., a–e) for programs.
		  a. Compare programs based on overall quality (e.g., do high-quality programs show higher child outcomes?).
		  b. Compare outcomes for groups of programs with high-medium-low amounts of staff experience/ characteristics (e.g., type/ amount of training/professional development, extent of turnover, caseloads, teaming approaches, contracted vs. hired staff).
		  c. Compare outcomes for groups of programs with different leadership characteristics (e.g., years of experience, use of data, supervision time/ approach).
		  d. Compare outcomes for groups of programs with different historical levels of meeting compliance indicators.
		  e. Compare programs serving high concentrations of different disability groups (as an extension also could look at other features of population such as average length of time in program, family income, race/ethnicity…).
			1. Where are there notable differences between local programs?
			2. Are differences the result of outliers or meaningful as differences between programs?
			3. Are there other potential explanations for differences? What else do you need to know more about?
			4. Do the data support what you expected to see? In what ways do they differ?
			5. Are there missing data? Does the amount or pattern of missing data suggest that the child outcomes data for one or more groups might not be accurate for the entire group?
			6. Given differences observed and inferences that are emerging, what are next steps for follow-up analysis? What are next steps for taking action? After taking these steps, what do you expect will happen? How will that be reflected in the data?
			7. What analyses should be repeated after you have taken specific action steps?

Example figure that stakeholders might review from data analysis on question 3: Do child outcomes differ across local programs?

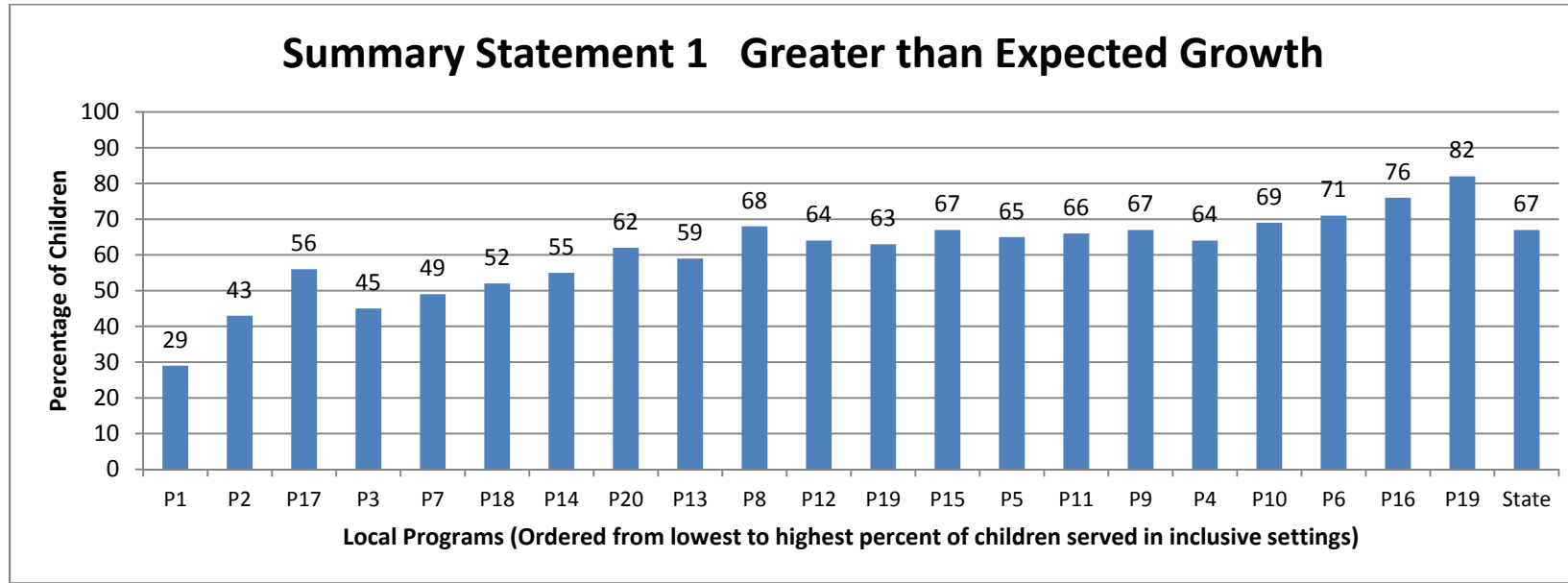## Knowledge and Skills Outcome: Progress Categories and Summary Statements Arrayed Across Programs of Diverse Sizes

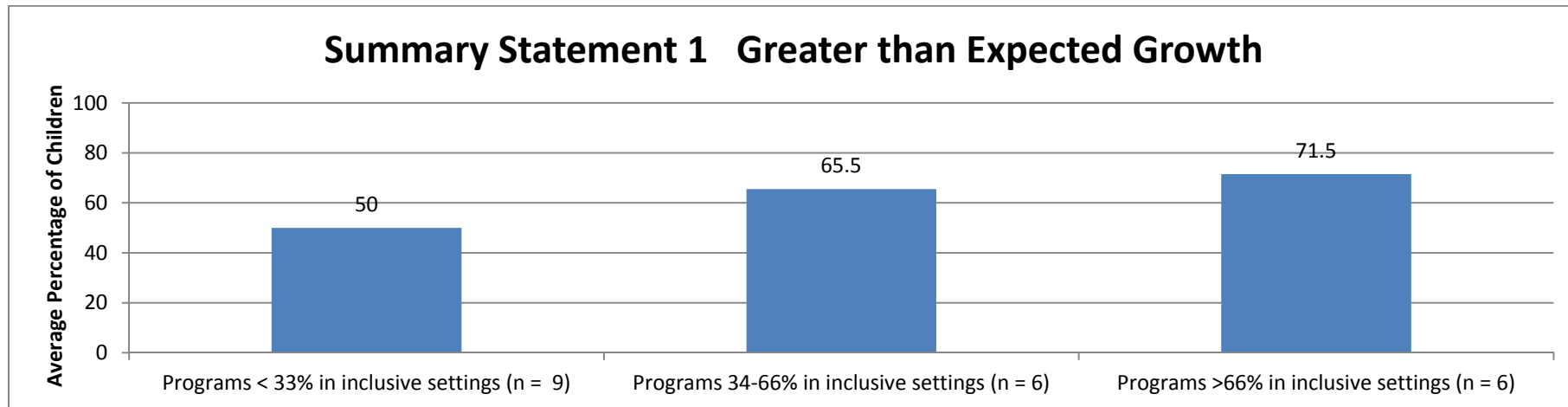## Example: Comparing Summary Statements When Grouping 40 Programs by Supervision Approaches (Question 3c)

Summary Statement 1   Greater Than Expected Growth

4.	**Do child outcomes differ across programs with specific intervention approaches or service features?**		
Defining Analysis Questions	**Clarifying Expectations**	**Analyzing Data**	**Describing and Interpreting Results**

4. Do child outcomes differ across programs with specific intervention approaches or service features?
 	
  a. Do programs that serve a greater proportion of children in inclusive settings show better outcomes for children?
 	
  b. Is using a clearly defined curriculum related to better outcomes? Is one curriculum more strongly related to positive outcomes than another?
 	
  c. Do programs that use ongoing formative assessments show more positive outcomes?
 	
  d. Are programs providing a greater intensity of services for children with the same type of disability showing better outcomes?
 	
  e. Are programs using a primary service provider model showing more positive outcomes?
 	
  f. Are programs staffing summer services differently showing differences in outcomes?
 	
  g. Are programs with different funding models showing differences in outcomes?
	What do you expect to see? Why?	4. Consider how program features relate to outcomes. For example, rank-order or group (high, medium, low) local programs on a specific intervention approach or program feature like those described in a–g and compare their summary statements or progress categories side by side. Or rank-order or group programs based on high, medium, low outcomes data. Examine and compare key intervention approaches or program features (e.g., a–g) for programs in those outcome groups.
		
		  a. Compare outcome groups to see whether there are differences in intervention settings (e.g., proportion of services delivered in inclusive settings).
		
		  b. Compare groups to see whether there are differences in whether or not they use a clearly defined curriculum. Compare groups using specific curricula.
		
		  c. Compare outcomes for programs ranking more or less in use of formative assessment.
		
		  d. Compare child outcomes groupings for programs with different average intensity of services for children with similar disability types.
		
		  e. Compare programs with differential child outcomes to consider whether there are differences in use of the PSP model or other teaming practices.
		
		  f. Compare programs with differences in how they handle summer staffing and service delivery for positive child outcomes.
		
		  g. Compare programs with different funding/contracting/reimbursement of services and team meeting policies.
			1. Where are there notable differences between local programs using different intervention approaches or service features?
			
			2. Are differences the result of outliers or meaningful as differences between major approaches?
			
			3. Are there other potential explanations for differences? What else do you need to know more about?
			
			4. Do the data support what you expected to see? In what ways do they differ?
			
			5. Are there missing data? Does the amount or pattern of missing data suggest that the child outcomes data for one or more groups might not be accurate for the entire group?
			
			6. Given differences observed and inferences that are emerging, what are next steps for follow-up analysis? What are next steps for taking action? After taking these steps, what do you expect will happen? How will that be reflected in the data?
			
			7. What analyses should be repeated after you have taken specific action steps?

Example: Variation in Greater Than Expected Growth (Summary Statement 1) for Programs Arrayed by Percentage of Children Served in Inclusive Settings (Question 4a)
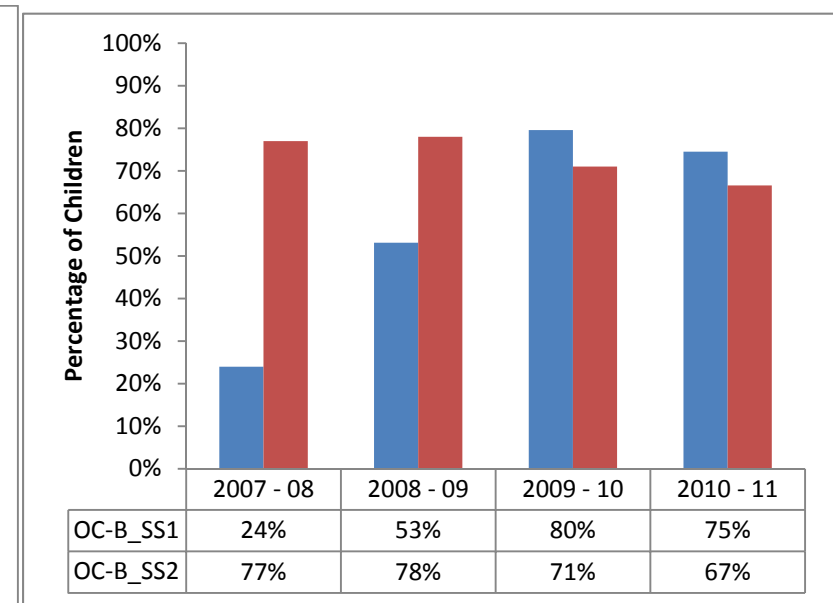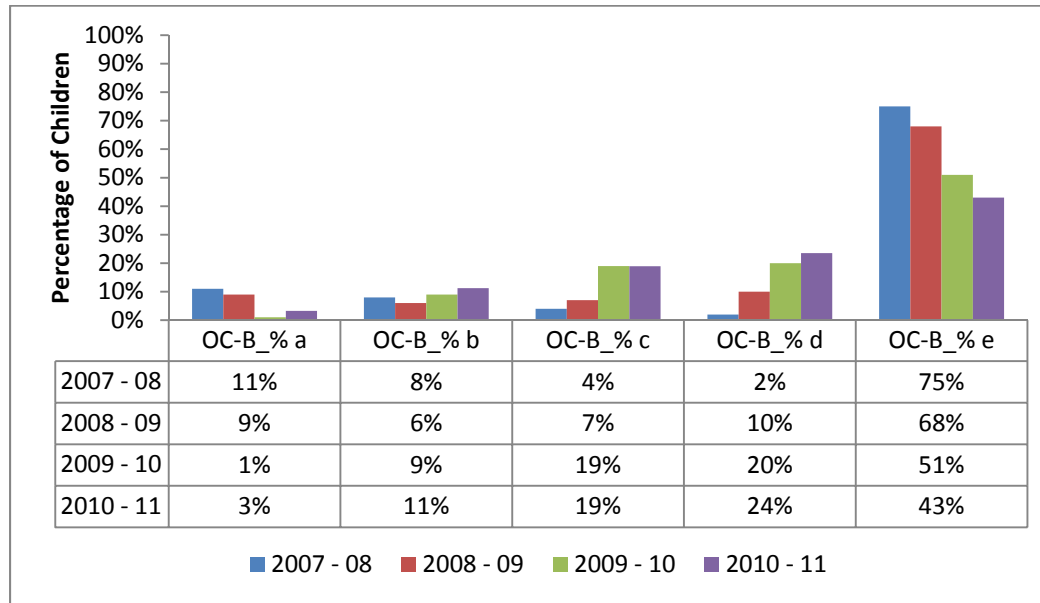
Summary Statement 1   Greater than Expected Growth

Percentage of Children (y-axis, 0–100)

Program	Value
P1	29
P2	43
P17	56
P3	45
P7	49
P18	52
P14	55
P20	62
P13	59
P8	68
P12	64
P19	63
P15	67
P5	65
P11	66
P9	67
P4	64
P10	69
P6	71
P16	76
P19	82
State	67

Local Programs (Ordered from lowest to highest percent of children served in inclusive settings)

Example: Average Summary Statement 1 Percentages for Programs with Varied Amounts of Service in Inclusive Settings

Summary Statement 1   Greater than Expected Growth

Average Percentage of Children (y-axis, 0–100)

Category	Value
Programs < 33% in inclusive settings (n = 9)	50
Programs 34-66% in inclusive settings (n = 6)	65.5
Programs >66% in inclusive settings (n = 6)	71.5

5. Are trends over time showing gradual increases in rates of child progress and levels of achievement?

Defining Analysis Questions	Clarifying Expectations	Analyzing Data	Describing and Interpreting Results

5. Are trends over time showing gradual increases in rates of child progress and levels of achievement?
 	
   a. Across the state, have there been improvements in child outcomes over time?
   b. For each program, have there been improvements in child outcomes over time?
   c. For subgroups of programs with different staff and service characteristics, have there been improvements in child outcomes over time?
   d. For subgroups of children with different characteristics, have there been improvements in outcomes over time?
   e. For subgroups of children in different family environments, have there been improvements in outcomes over time?
   f. Do improvements in child outcomes over time at the state or program level look different before and after a key policy change/event (e.g., change in eligibility criteria, change in fees, reorganization of system)?
 	
Extension…Consider subgroups of children based on key issues most important in your data based on earlier sections of the guidance table.
	What do you expect to see? Why?	5. Compare the change over time and in child outcomes for groups of children across years:
		
		   a. For all children in the state
		   b. By program
		   c. For programs with different staff and service characteristics as noted in earlier table sections
		   d. For children with different characteristics as noted previously
		   e. For children from families with different characteristics previously
		   f. For all children in the state or by program comparing progress across years before the event and after the policy change/event date.
			1. Where are there notable differences in trends over time between programs?
			2. Are differences the result of outliers or meaningful for whole groups?
			3. Are there other potential explanations for differences (consider issues suggested during expectation discussion)? Have there been significant demographic changes in your population of young children? Families? Program characteristics?
			4. Do the data support what you expected to see? In what ways do they differ?
			5. What activities have been undertaken that might be expected to influence the changes in child outcomes over time?
			6. What else do you need to know more about?
			7. Given differences observed and inferences that are emerging, what are next steps for follow-up analysis? What are next steps for taking action? After taking these steps, what do you expect will happen? How will that be reflected in the data?
			8. What analyses should be repeated after you have taken specific action steps?

Example: Statewide Progress Category and Summary Statement Percentages Over Time (Knowledge and Skills Outcome

	OC-B_% a	OC-B_% b	OC-B_% c	OC-B_% d	OC-B_% e
2007 - 08	11%	8%	4%	2%	75%
2008 - 09	9%	6%	7%	10%	68%
2009 - 10	1%	9%	19%	20%	51%
2010 - 11	3%	11%	19%	24%	43%

■ 2007 - 08   ■ 2008 - 09   ■ 2009 - 10   ■ 2010 - 11

	2007 - 08	2008 - 09	2009 - 10	2010 - 11
OC-B_SS1	24%	53%	80%	75%
OC-B_SS2	77%	78%	71%	67%

Example: Trends in SS1 (Greater Than Expected Growth) Over Three Years on Acquiring and Using Knowledge and Skills Across Programs

Program (n)	SS1 (2008-09)	SS1 (2009-10)	SS1 (2010-11)
P1 (238)	61%	88%	83%
P2 (1425)	54%	81%	83%
P3 (475)	56%	83%	78%
P4 (257)	54%	81%	76%
P5 (950)	12%	39%	34%
P6 (380)	11%	38%	33%
P7 (143)	57%	84%	79%
P8 (285)	53%	80%	75%
P9 (333)	46%	73%	68%
P10 (48)	31%	35%	79%
P11 (109)	58%	85%	80%
P12 (48)	37%	64%	59%
P13 (62)	87%	48%	83%

We encourage you to consider the following resources that may complement material in this document:

- **Local Contributing Factors Tool:** http://projects.fpg.unc.edu/~eco/pages/usingdata.cfm#ResourcesandTools
  - o Provides questions for local programs to consider about factors that may be affecting their child outcomes data. Questions address systems/infrastructure issues as well as providers/practice issues. This tool is often used when local programs have access to their data and are looking for a rubric to support thinking through what practices might be contributing to variation in the data.
- **National-State Summary Statement Graphing Template:** http://projects.fpg.unc.edu/~eco/pages/summary.cfm
  - o Allows users to insert state data and use autogenerated graphs of state vs. national outcomes data.
- **Difference Calculator** (draft to be released at conference; watch "What's new" under ECO soon for web posting).
  - o Enables users to consider whether the extent of variation in numbers from year to year or program to program is statistically significant given the number of children—that is, whether numerical differences are different but not large enough to constitute a true difference between the two years or programs.
- **Pattern Checking Table:** http://projects.fpg.unc.edu/~eco/pages/quality_assurance.cfm
  - o Offers suggestions about different analyses to run and questions to ask related to the quality of the child outcomes data. Pattern checking allows you to determine whether data results that look like differences might be due to poor data quality (an alternative to the program differences hypotheses focused on more in this guidance table).
- **Automated Tables and Charts from the COS Calculator:** http://projects.fpg.unc.edu/~eco/pages/outcomes.cfm#CalculatingProgress
  - o COS process users can insert data into the COS calculator and use autogenerated charts and tables to review child outcomes data.
- **Child Outcomes Measurement System Framework and Self-Assessment:** http://projects.fpg.unc.edu/~eco/pages/frame_dev.cfm
  - o A framework with indicators of an effective outcomes measurement system. Stakeholders can use the self-assessment to see to what extent the state outcome measurement system reflects quality indicators, including those for data analysis and reporting.
- **See ECO Presentations under ECO Resources:** http://projects.fpg.unc.edu/~eco/pages/archive.cfm
  - o Content of ECO presentations, and sometimes recordings, are posted here by the year in which information was presented. This includes content from the full agenda of each of the outcomes conferences, national conference calls, and presentations tailored on specific topics for smaller groups or states. Read through the short descriptions in a list or search the database on the ECO website for specific keywords to find presentations about topics of interest.
- **Using data section on ECO website:** http://projects.fpg.unc.edu/~eco/pages/usingdata.cfm#ResourcesandTools
  - o A variety of resources are posted here, including past presentations, workshops, and documents designed to help states use their child outcomes data.
- **Five steps for structuring data-informed conversations and action in education:** http://ies.ed.gov/ncee/edlabs/regions/pacific/pdf/REL_2013001.pdf
  - Document developed by Kekahio and Baker with the Institute for Educational Sciences describes a series of steps that include setting the stage, examining the data, understanding the findings, developing an action plan, and monitoring progress and measuring success. Tools for each stage are provided to guide conversations associated with the process of using data.

Although it is beyond the scope of this guidance table to provide a comprehensive set of best practices and caveats related to the specific types of analyses to run, the following are suggestions to consider in analyzing and reviewing child outcomes data:

- Sample included in analysis
  - Review which children's data should be included in each analysis and who is and is not a part of the analysis. An important decision during analysis and as you interpret data involves knowing which children are reflected in the data. For example, do the data show all those with entry data regardless of whether or not they have exited, include only those with valid entry and exit data, include only those who exited with less than 6 months of service from the program or not, or some other group? Different questions will warrant use of different samples. Sometimes, interpretations about what the data mean depend greatly on which children are included and which children are not included in the sample for analysis.

- Charting data
  - Many stakeholders find it easier to review charts and offer richer interpretations from reviewing them than by looking at tables with detailed numbers. Using data labels on bars or having specific tables with detailed numbers is helpful, too.
  - Use the same scale for the *y* axis between groups for all charts presented at the same time, even if the groups are very different in data values. Autoscaling in programs like Excel can lead to either over- or under-estimating differences because individuals tend to glance at the height of bars and perceive differences based on height rather than looking at the specific numerical differences.
  - Including the *n*, number of people reflected in a given cell or bar of a table/chart, is important. If small numbers are involved, variation in the data may not be as stable as when numbers are larger.

- Interpreting data
  - Have a broad group of stakeholders examine the analyses and identify many possible interpretations for the findings before evaluating the likelihood of the possibilities. Usually, additional analyses will be needed to drill down to investigate other factors and consider their relationships with the data analysis that was completed.

- Repeating analyses
  - Keep a record of how each analysis was conducted (e.g., ask the programmers to document which commands were used) and notes about analytic assumptions and approaches. After implementing program improvement activities or as new data become available in subsequent years, you will want to repeat the analysis to see whether changes occur. Having information about exactly how the analyses were conducted is needed to ensure that the "before" and "after" numbers reflect true change and are not simply the result of a different analyst, a slightly different set of exclusion criteria, or a different approach to the analysis.