



Spreadsheet
Application
for Calculating
Disproportionality
Measures (Revised)

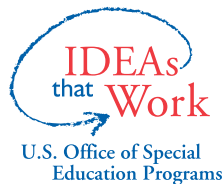
User's Guide

The *IDEA* Data Center (IDC) produced this document under U.S. Department of Education, Office of Special Education Programs Grant No. H373Y130002. Richelle Davis and Meredith Miceli serve as the project officers. This is a revision of the document originally published by the Data Accountability Center (DAC) under U.S. Department of Education, Office of Special Education Programs Grant No. H373Y070002.

The views expressed herein do not necessarily represent the positions or policies of the Department of Education. No official endorsement by the U.S. Department of Education of any product, commodity, service or enterprise mentioned in this publication is intended or should be inferred. This product is public domain. Authorization to reproduce it in whole or in part is granted.

Westat is the lead organization for IDC. For more information about the center's work and its partners, see www.ideadata.org

Bollmer, J. and Bitterman, A. (January 2016) *Spreadsheet Application for Calculating Disproportionality Measures (Revised) – User's Guide*. *IDEA* Data Center. Rockville, MD: Westat.



Introduction

Purpose of User's Guide and Intended Audience

Westat originally created this Excel spreadsheet application in 2003 as a tool to aid states in their assessment of racial/ethnic disproportionality. The spreadsheet application has since been updated to better assist states in meeting the new provisions of the law. The application calculates several disproportionality measures, including composition, relative difference in composition, risk, risk ratio, weighted risk ratio, and several new measures for examining disproportionality: difference in composition, the E-formula, risk difference, alternate risk ratio, and variations of several of these measures for total disciplinary removals. IDC's technical assistance document, *Methods for Assessing Racial/Ethnic Disproportionality in Special Education: A Technical Assistance Guide (Revised)* provides more information about these measures, including step-by-step instructions on how to calculate them, discussions of how to interpret each, and considerations.¹

The intended audience of this revised user's guide and spreadsheet application is state agency staff who analyze disproportionality data. While this user's guide and the spreadsheet application are intended to be as user-friendly as possible, they do assume a basic knowledge of Excel. In addition, some of the methodologies and calculations included in the spreadsheet application assume users have a certain level of technical knowledge or expertise regarding analyzing and interpreting special education data. This user's guide and spreadsheet application are not intended for general audiences who do not have that level of technical knowledge or expertise.

The spreadsheet can be used to calculate these various measures for the state overall and for each district within the state. It is the responsibility of the state to determine which measures to use and to set thresholds for when districts will be identified with disproportionate representation or significant disproportionality.

Organization of This User's Guide

This user's guide is divided into three parts:

- Part I. Overview of the Spreadsheet Application: This section describes each of the sheets that compose the spreadsheet.
- Part II. Data Requirements for the Spreadsheet Application: This section includes discussions on data formats, district identifiers, missing data, and including state totals.
- Part III. Instructions for Using the Spreadsheet Application: This section describes the steps for using the spreadsheet application, including opening the spreadsheet application, entering data, running the spreadsheet, and reviewing results.

The final section of the user's guide addresses how to handle questions or problems

¹ The disproportionality TA guide is available at www.IDEadata.org.

Part I. Overview of the Spreadsheet Application

The spreadsheet application is composed of seven sheets: (1) *Main Menu*, (2) *IDEA Data*, (3) *Comparison Data*, (4) *Composition*, (5) *Risk*, (6) *Work*, and (7) *Help*. For Discipline Data – Total Disciplinary Removals, there is a Total Removals by Child (*TRPC*) sheet instead of the Risk sheet. Some of these sheets require user input while others display the results of the analyses. Below is an overview of each sheet. More detailed information about these sheets and how to use the spreadsheet application is provided in Parts II and III.

Input Sheets

There are three input sheets: the *Main Menu*, *IDEA Data* sheet, and *Comparison Data* sheet. These sheets require the user to specify information about the data, including the type of IDEA and comparison data being analyzed, and enter the IDEA and comparison data.

1. Main Menu

Use this sheet to provide information about the data you are analyzing:

- Choose the type (i.e., child count, environment, discipline, or other) and particular category (e.g., autism, total disciplinary removals) of IDEA data you are analyzing.
- Choose the type of data you are using for comparison (i.e., enrollment, total child count, or other).
- Provide information such as age range/grade and data collection year about both your IDEA and comparison data for labeling purposes. Indicate whether you are including state totals as part of your data (see Part II for more information).
- Indicate whether you will be analyzing five racial/ethnic categories or seven racial/ethnic categories.

- Run the application by clicking on the “Calculate” button.
- Clear selected data and/or results sheets by selecting one of the clear options and clicking on the “Clear” button.

2. IDEA Data

Enter or paste the IDEA data you will be analyzing (i.e., disability, educational environment, or discipline data) onto this sheet. These data must be disaggregated by district and by race/ethnicity.

3. Comparison Data

Enter or paste the district-level comparison data you will use (i.e., enrollment or total child count data) onto this sheet. These data must be disaggregated by district and race/ethnicity.

Results Sheets

There are four results sheets: *Composition*, *Risk*, *TRPC*, and *Work*. The *Composition* sheet displays results for the composition-based methodologies; the *Risk* sheet displays results for the risk-based methodologies; and the *TRPC* sheet displays results for the TRPC-based methodologies. The *Work* sheet displays the IDEA and comparison data as well as totals for each.

1. Composition

This sheet displays composition for the IDEA category, composition for the comparison group (i.e., enrollment or total child count), difference in composition, relative difference in composition, and the E-formula for each racial/ethnic group for each district and for the state overall.

2. Risk

This sheet displays risk, the risk ratio, the weighted risk ratio, the alternate risk ratio, and risk difference for each racial/ethnic group for each district and the state overall. This sheet is displayed for all analyses except Discipline – Total Disciplinary Removals.

3. TRPC

This sheet is displayed instead of the *Risk* sheet when the category *Discipline – Total Disciplinary Removals* is analyzed. This sheet displays TRPC, the TRPC ratio, the weighted TRPC ratio, the alternate TRPC ratio, and TRPC difference for each racial/ethnic group for each district and the state overall.

4. Work

This sheet displays the sorted IDEA (i.e., disability, educational environment, or discipline data by race/ethnicity for each district) and comparison data (i.e., enrollment or total child count) and totals for each. It also identifies districts with missing data or misaligned district IDs (see Part II for more information).

Help Sheet

This sheet explains how to copy and paste data into Excel, what to do if the application does not run, error messages you may encounter while using the application, the meaning of shaded cells, what to do if you experience slowness, and information if you have questions or problems.

Part II. Data Requirements for the Spreadsheet Application

In order to run the spreadsheet application, the data must be organized a certain way, district identifiers must be entered, and only numeric values will be analyzed. You also have the option of providing state totals. Data can be entered directly into the spreadsheet application, or they can be exported from another program such as SPSS, SAS, or Access into an Excel worksheet then cut and pasted into the appropriate data sheet. Regardless, it is important to follow the format requirements of the spreadsheet application outlined below.

Data Format

- The spreadsheet application analyzes district-level data for one IDEA category (e.g., autism, separate school, etc.) at a time. After an analysis of one category, you will need to save the spreadsheet using a unique name. You should then clear the IDEA data that you just analyzed and enter or paste the IDEA data for the next analysis. If you are analyzing data that require different comparison data, then you will also need to clear those data and enter or paste the comparison data for the next analysis.
- Your IDEA data and comparison data must be organized so that each row is the data for one district and each column is the data for one of the seven (or five) race/ethnicity categories.
 - Your district rows do not have to be sorted in any particular order (i.e., alphabetical, ascending, descending, etc.); your IDEA data and comparison data will be sorted and the districts matched up before the application conducts any analyses.

District Identifiers

- Every district row must have a unique identifier. Identifiers can be alpha or numeric.
- If one or more districts do not have an identifier (i.e., the ID cell is blank), all districts from that row down will be excluded from the analyses.
- The same unique identifier must be used to identify a district on both the *IDEA Data* and *Comparison Data* sheets. For example, if you identify a district as St. James County on the *IDEA Data* sheet, you must identify it as St. James County on the *Comparison Data* sheet. If you identify it as St. James County on one sheet and Saint James County on the other sheet, the application cannot match the districts up and will not be able to analyze your data accurately. If districts are misaligned this way, they will be shaded red on the *Work* sheet.

Missing Data

- Only numerical values will be analyzed; a text value in any cell will result in an error message.
- The application reads blank cells or cells with periods as missing data. No other values are recognized as missing data (e.g., -9, -, *, etc.).
 - Although the application will function if you have missing data, the results for any districts with missing data and the state overall will be invalid since calculations will be based on incomplete data.
- Cells with missing data are highlighted in red on the *Work* sheet.
- Blank rows will result in invalid results. If there are blank rows, all districts after the first blank row will be excluded from the analyses.

Including State Totals with Your Data

- You have the option of providing state totals as part of your IDEA and/or comparison data.
 - You must indicate on the Main Menu whether your data include state totals.
 - If you **choose NOT to provide** state totals:
 - The application will calculate state totals by summing the district data; these calculated state totals will be used in the analyses.
 - If you mistakenly indicate on the *Main Menu* sheet that you provided state totals, the last row of district data will be treated as your state totals.
 - If you **choose to provide** state totals:
 - The application will use your state totals in the analyses. The application will also calculate state totals by summing your district data.
- The last row of data must be your state totals.
 - If your state totals appear elsewhere in your data, they will be treated as district-level data, and your last row of district-level data will be treated as your state totals.
 - If you mistakenly indicate on the *Main Menu* sheet that you did not provide state totals, your state totals will be treated as district-level data.
 - **Do not** include any blank rows before your state totals row.
 - Your state totals row must have a unique identifier.
 - If this row does not have an identifier (i.e., the ID cell is left blank), the application will treat the state totals row as a blank row; it will use the last row with an identifier as your state totals.
 - The spreadsheet application will compare your state totals to the totals calculated by summing the district-level data. Discrepancies between the totals will be highlighted in green on the *Work* sheet.

Part III. Instructions for Using the Spreadsheet Application

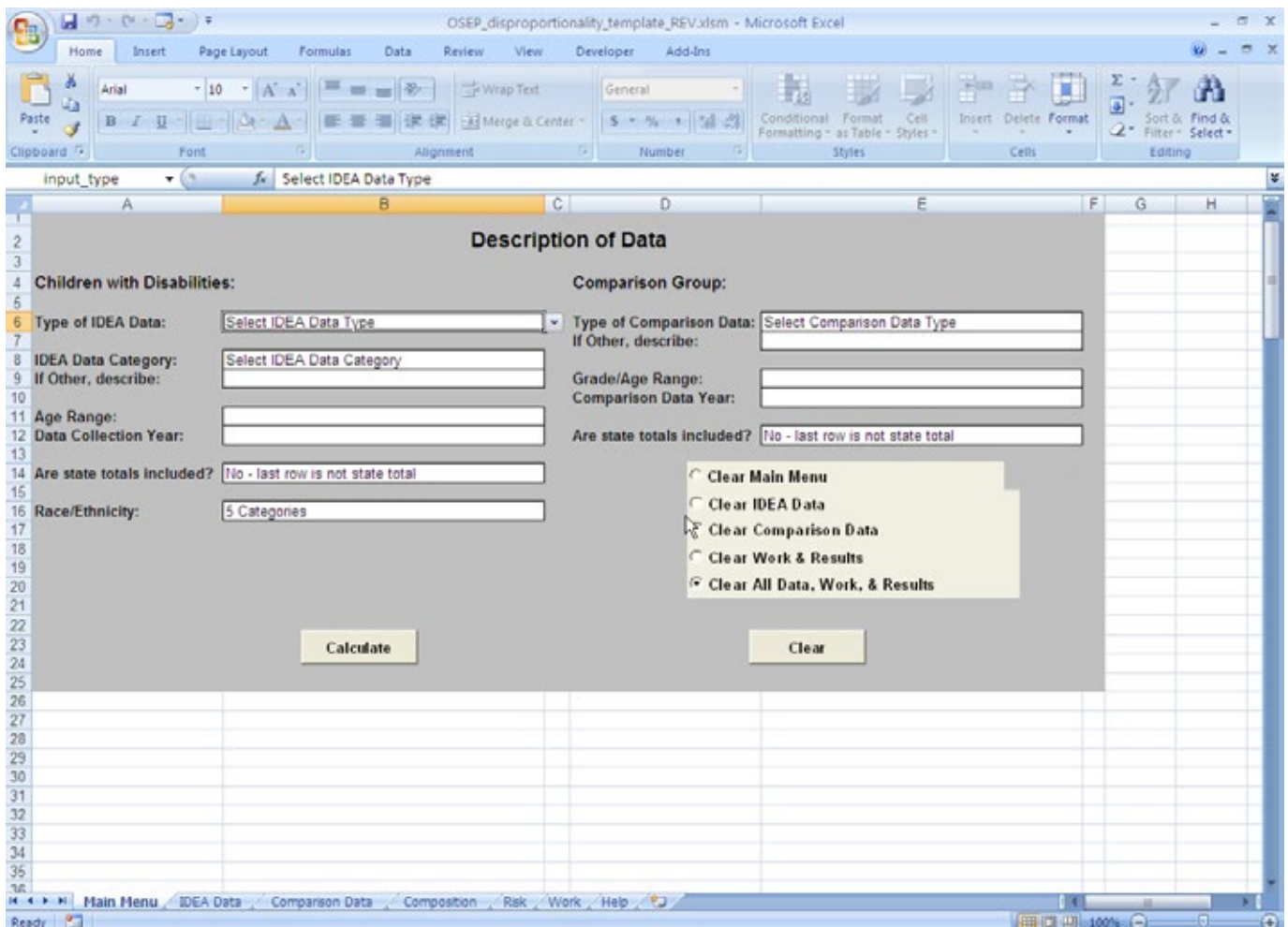
In this section, we describe how to use the spreadsheet application, including how to open the spreadsheet application, complete the input sheets, review the results sheets, and save and clear your data.

Opening the Spreadsheet Application

1. There are three versions of the spreadsheet. Open the version of the spreadsheet application that is compatible with your version of Excel.
 - The version with the file extension .xlsm called OSEP_disproportionality_template_REV.xlsm is to be used with 32-bit Excel 2007 and Excel 2010.
 - The version with the file extension .xlsm called OSEP_disproportionality_template_REV64.xlsm is to be used with 64-bit Excel 2010.
 - The version with the file extension .xls (OSEP_disproportionality_template_REV.xls) is to be used with Excel 1997 or Excel 2003.
2. You must enable the macros for the application to function. You may see a popup message telling you that the spreadsheet contains macros. Click on the "Enable Macros" button to continue. You may also see a Security Warning in the message bar. If you do, click on Options, then click on "Enable this Content," then click on "OK."
 - For information and instructions on how to change macro security settings, open Excel then open Excel Help and enter "macro" in the Excel Help search field then select "Change macros security settings in Excel."
3. Your screen resolution should be set to 1024x768 or higher. If your resolution is set to the lowest setting, or you change your screen resolution while you have the spreadsheet application open, portions of the *Main Menu* sheet can become distorted.
 - If this happens, close the spreadsheet application, adjust your screen resolution and reopen the spreadsheet application. (To change the screen resolution, go to your computer's Control Panel, select "Display" then "Change display settings.")
 - If the distortion occurs after you have already entered your data, you may want to copy and paste your data into a new Excel file before closing the spreadsheet application; otherwise, you will lose the data you have entered. If the *Main Menu* sheet is distorted and you save the spreadsheet application before closing it, you will continue to see the distortions when you reopen the spreadsheet application.

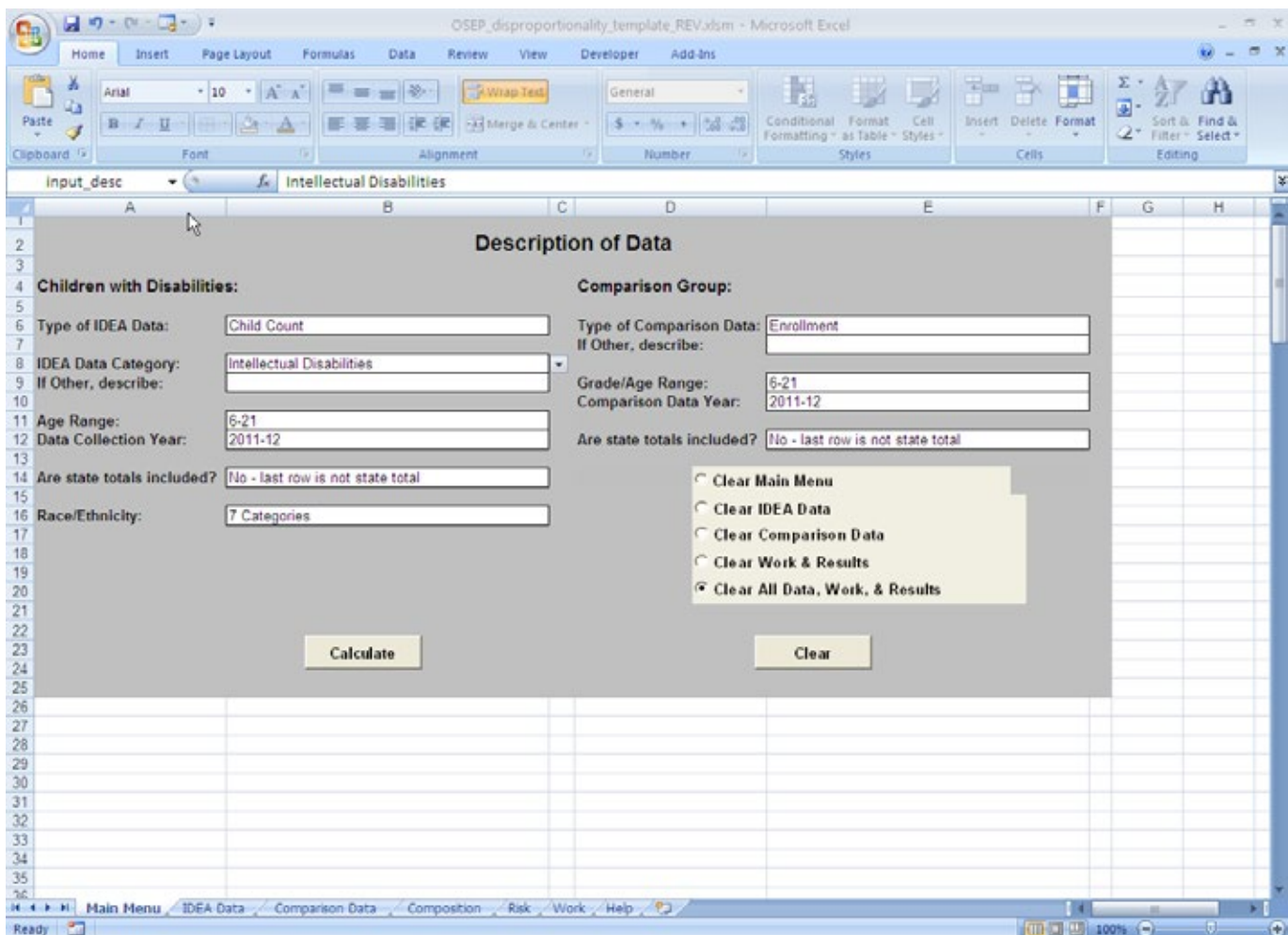
Completing the Input Sheets

1. Use the *Main Menu* sheet to describe your data.
 - The spreadsheet application should open to the *Main Menu* sheet. If it does not, click on the *Main Menu* tab.



- You must select an IDEA data type, an IDEA data category, and a comparison data type; not completing these fields will result in error messages. You must also indicate whether you are providing state totals and how many race/ethnicity categories you will be using. The remaining fields are optional and will be used by the spreadsheet application to describe your data on the Results sheets.
- Under the heading “Children with Disabilities”:
 - Select the type of IDEA data you plan to analyze (i.e., child count, environment, discipline, or other).
 - Select the IDEA data category you plan to analyze (e.g., autism, total disciplinary removals, etc.). The available options change depending on the type of IDEA data you choose to analyze; an “Other” option is always available.
 - If you select “Other” for either the IDEA data type or the IDEA data category, you should describe the data in the “If Other, describe” cell.

- Describe the age range for your data (e.g., ages 6 through 21).
- Describe the collection year of your data (e.g., 2010-11).
- Indicate whether your IDEA data include state totals.
- Indicate the number of racial/ethnic categories you will analyze (i.e., either five or seven categories).
- Under the heading "Comparison Group":
 - Select the type of comparison data you will be providing (i.e., enrollment, total child count, or other).
 - If you select "Other" for your comparison data type, you should describe the data in the "If Other, describe" cell.
 - Describe the grade/age range for your data (e.g., pre-kindergarten through 12th grade).
 - Describe the collection year of your data (e.g., 2010).
 - Indicate whether your comparison data include state totals.
- Your completed Main Menu sheet might look like the example below if you are analyzing Child Count data for children with Intellectual Disabilities.



2. Click on the *IDEA Data* sheet tab.

- Enter or paste your district-level disability, educational environment, or discipline data for the IDEA data category into the cells.
- As noted previously, each row is the data for one district and each column is the data for one of the seven (or five) race/ethnicity categories. For example,

the data in cell B4 in the example below indicates that, in District 1, there were 40 children with autism who were Hispanic/Latino.

- Make sure that your data comply with the data requirements described in Part II (e.g., each district has a unique identifier, there are no blank rows in your data, etc.).

| ID | Hispanic / Latino | American Indian or Alaska Native | Asian | Black or African American | Native Hawaiian or Other Pacific Islander | White | Two or More Races |
|-------------|-------------------|----------------------------------|-------|---------------------------|---|-------|-------------------|
| District 1 | 40 | 0 | 3 | 402 | 0 | 303 | 5 |
| District 2 | 16 | 15 | 35 | 312 | 5 | 691 | 22 |
| District 3 | 0 | 0 | 0 | 189 | 0 | 0 | 0 |
| District 4 | 10 | 2 | 11 | 388 | 2 | 108 | 8 |
| District 5 | 121 | 11 | 18 | 316 | 21 | 782 | 8 |
| District 6 | 179 | 7 | 26 | 182 | 4 | 682 | 35 |
| District 7 | 89 | 0 | 0 | 199 | 6 | 97 | 4 |
| District 8 | 77 | 5 | 27 | 493 | 0 | 56 | 15 |
| District 9 | 145 | 7 | 28 | 281 | 0 | 706 | 19 |
| District 10 | 123 | 0 | 18 | 348 | 7 | 560 | 21 |

3. Click on the *Comparison Data* sheet tab.

- Enter or paste either your district-level enrollment or total child count data into the cells.
- As noted previously, each row is the data for one district and each column is the data for one of the seven (or five) race/ethnicity categories. For example, the data in cell B4 in the example below indicates that

there were 7,564 children who were Hispanic/Latino enrolled in District 1.

- Make sure that your data comply with the data requirements described in Part II (e.g., the district IDs used on this sheet correspond to the district IDs on the *IDEA Data* sheet, there are no blank rows in your data, etc.)

| ID | Hispanic / Latino | American Indian or Alaska Native | Asian | Black or African American | Native Hawaiian or Other Pacific Islander | White | Two or More Races |
|-------------|-------------------|----------------------------------|-------|---------------------------|---|--------|-------------------|
| District 1 | 7,564 | 342 | 1,403 | 9,898 | 202 | 30,421 | 1,793 |
| District 2 | 11,563 | 191 | 1,698 | 5,882 | 166 | 21,438 | 2,074 |
| District 3 | 500 | 25 | 154 | 4,697 | 51 | 386 | 76 |
| District 4 | 5,688 | 265 | 1,756 | 11,586 | 137 | 22,541 | 1,144 |
| District 5 | 6,002 | 311 | 1,213 | 6,224 | 212 | 34,897 | 3,175 |
| District 6 | 3,256 | 225 | 2,304 | 7,845 | 73 | 40,158 | 1,626 |
| District 7 | 10,488 | 198 | 875 | 10,786 | 289 | 13,669 | 1,081 |
| District 8 | 7,235 | 246 | 1,657 | 5,643 | 89 | 31,796 | 892 |
| District 9 | 8,013 | 143 | 1,875 | 6,002 | 111 | 28,977 | 2,350 |
| District 10 | 9,363 | 43 | 1,099 | 5,138 | 94 | 14,392 | 1,076 |

4. Return to the *Main Menu* sheet by clicking on the tab. Click on the "Calculate" button to run the application.
 - If the application does not run, make sure you have the macros enabled (see #2 under "Opening the Spreadsheet Application" above for instructions on enabling macros).
 - If you receive any error messages, make sure to address the errors then click on the "Calculate" button again.

- Examine the sheet for missing data; cells with missing data are shaded in red (■):
- If you provided state totals, verify that your reported totals match the calculated totals; discrepancies are shaded in green (■):
- Examine the sheet for IDEA data that are larger than the comparison data for that category; IDEA data values that are larger than the comparison data values are shaded yellow (■).
- If you find any problems with your data, go to the *IDEA Data* and/or *Comparison Data* sheets, revise your data, and then re-run the analyses by clicking on the "Calculate" button on the *Main Menu* sheet. Repeat these steps until you no longer find problems.

Reviewing the Results Sheets

1. After the spreadsheet application has run, it will automatically open to the *Work* sheet.
 - Examine the sheet to make sure all the data are correct. Some cells may be shaded. The meaning of the shading will appear at the bottom of the page.

| IDEA Data: Child Count - Intellectual Disabilities for 6-21 in 2011-12 by Race/Ethnicity | | | | | | | | Comparison Data: Enrollment for 6-21 in 2011-12 by Race/Ethnicity | | | | |
|--|-------------------|----------------------------------|-------|---------------------------|---|-------|-------------------|---|----------------------------------|--------|---------------------------|---|
| ID | Hispanic / Latino | American Indian or Alaska Native | Asian | Black or African American | Native Hawaiian or Other Pacific Islander | White | Two or More Races | Hispanic / Latino | American Indian or Alaska Native | Asian | Black or African American | Native Hawaiian or Other Pacific Islander |
| District 1 | 9099 | 0 | 3 | 402 | 0 | 303 | 5 | 7564 | 342 | 1403 | 9998 | 202 |
| District 10 | 123 | 0 | 10 | 348 | 7 | 560 | 21 | 9363 | 45 | 1099 | 5138 | 94 |
| District 2 | 18 | 15 | 35 | 312 | 5 | 891 | 22 | 11583 | 191 | 1888 | 5832 | 168 |
| District 3 | 0 | 0 | 0 | 189 | 0 | 0 | 0 | 500 | 25 | 154 | 4897 | 51 |
| District 4 | 10 | 2 | 11 | 308 | 2 | 100 | 6 | 5888 | 265 | 1756 | 11586 | 137 |
| District 5 | 121 | 11 | 0 | 318 | 21 | 732 | 3 | 8052 | 311 | 1213 | 6224 | 212 |
| District 6 | 179 | 7 | 26 | 182 | 4 | 682 | 36 | 3256 | 226 | 2204 | 7845 | 73 |
| District 7 | 69 | 0 | 0 | 199 | 0 | 97 | 4 | 10488 | 198 | 875 | 10786 | 289 |
| District 8 | 77 | 5 | 27 | 493 | 0 | 58 | 15 | 7235 | 246 | 1657 | 5645 | 88 |
| District 9 | 145 | 7 | 23 | 281 | 0 | 706 | 19 | 8013 | 143 | 1875 | 6002 | 111 |
| All (using reported total) | 9740 | 47 | 145 | 3110 | 45 | 2935 | 132 | 70000 | 1991 | 13934 | 73653 | 1424 |
| All (using summed total) | 9,740 | 47 | 145 | 3,110 | 45 | 3,935 | 132 | 69,872 | 1,991 | 13,934 | 73,853 | 1,424 |

When the IDEA data value is larger than the comparison data value for the race/ethnicity category, the cells being compared are shaded yellow. Please check and correct your data.
 One or more cells are missing data or the data for one or more districts are misaligned. Please check your data.
 One or more reported totals does not equal the summed totals. Please check your data.

2. Go to the *Composition* and *Risk* (or *TRPC*) Results sheets by clicking on the tabs.
 - The number of districts included in the analyses is listed at the top of these sheets as part of the title. Verify that the number of districts analyzed matches the number of districts you planned to analyze. If the numbers do not match, revise your data and re-run the application by returning to the *Main Menu* sheet and clicking on the "Calculate" button.
 - These sheets include the results for each district and for the state overall. The results for the state will be located after the results for your districts; state results are labeled "All (using summed total)." If you included state totals as part of your data, there will be another row labeled "All (using reported total)."
 - On the *Risk* and *TRPC* sheets, the risk /TRPC ratios and weighted risk/TRPC ratios are automatically replaced by an alternate risk/TRPC ratio when particular cells sizes are small (see the last set of bullets in this section for more information).
 - Some cells may be shaded. The meaning of the shading will appear at the bottom of the page.
 - On the *Risk* and *TRPC* sheets, aqua shading (■) means that the alternate risk ratio or alternate TRPC ratio was calculated because there were fewer than 10 children in the comparison group (for the risk ratio and weighted risk ratio), or there were no disciplinary removals for the comparison group (for the TRPC ratio and weighted TRPC ratio).
 - On the *Composition* sheet, blue shading (■) means that the value for E is above the upper bound for overrepresentation, and orange shading (■) means that the value for E is below the lower bound for underrepresentation.
- Other cells may be empty for the following reasons:
 - A risk/TRPC ratio, weighted risk/TRPC ratio, or alternate risk/TRPC ratio is not calculated if there are fewer than 10 children in the racial/ethnic group enrolled in the district (if you select enrollment as your comparison data) or total child count (if you select total child count as your comparison data).
 - A risk/TRPC ratio, weighted risk /TRPC ratio, or alternate risk /TRPC ratio is not calculated if there are no children in the comparison group in the disability, educational environment, or discipline category at the state level.
 - A risk/TRPC ratio, weighted risk/TRPC ratio, or alternate risk/TRPC ratio is not calculated if there are fewer than 10 children in the comparison group enrolled in the state (if you select enrollment as your comparison data) or in the state total child count (if you select total child count as your comparison data).
 - If there are missing data on the *IDEA Data* or *Comparison Data* sheets, there will be empty cells on the results sheets (as noted in # 1 of this section, cells with missing data are shaded in red (■) on the *Work* sheet).

Saving and Clearing Your Data

- To save your results, return to the *Main Menu* sheet and click on the "Save As" button. You will then be able to name your file and choose where you want it to be saved.
 - When saving your results, you cannot name your file "OSEP_disproportionality_template_REV.xls" or "OSEP_disproportionality_template_REV.xlsm" because this file name refers to the spreadsheet application template. You must choose a different file name to save your results. It is important to save your results because subsequent calculations will replace the results from this calculation.
- To clear your Data and/or Result sheets, go to the *Main Menu* sheet, select one of the clear options, and click on the "Clear" button. The clear options are as follows:
 - "Clear Main Menu" – clears all of the data labels and resets the *Main Menu* sheet options.
 - "Clear IDEA Data" – deletes the data on the *IDEA Data* sheet.
 - "Clear Comparison Data" – deletes the data on the *Comparison Data* sheet.
 - "Clear Work & Results" – deletes the results from the *Composition*, *Risk* or *TRPC*, and *Work* sheets.
 - "Clear All Data, Work, & Results" – deletes the data/results from all sheets (i.e., *IDEA Data*, *Comparison Data*, *Composition*, *Risk* or *TRPC*, and *Work* sheets).

Questions or Problems?

The spreadsheet application and user's guide are meant to be used in conjunction with the TA guide, *Methods for Assessing Racial/Ethnic Disproportionality in Special Education: A Technical Assistance Guide (Revised)*. You should review this TA guide to understand the various methods and how they are calculated and interpreted.

If you have questions or encounter problems while using the spreadsheet application, see the Help sheet in the spreadsheet for additional information.

This spreadsheet application assumes a basic knowledge of Excel. If you have questions about the disproportionality spreadsheet application that are not specific to the use of Excel, please email them to ideadata@westat.com.