## English Learner State Accountability Resource (ELSTAR) User Guide

June 2019

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## Introduction

The English Learner State Accountability Resource (ELSTAR) is a statistical analysis tool to support state educational agency (SEA) leaders in making data-based decisions about English learner accountability, checking the validity and reliability of the English language proficiency (ELP) indicator, and providing technical assistance to local educational agencies. This user's guide provides an overview of the ELSTAR tool. It is organized into four sections:

- Section 1 provides an overview of tool download and initialization.
- Section 2 describes the steps involved in data preparation.
- Section 3 discusses the procedure for data import into the tool.
- Section 4 focuses on data exploration by walking the user through key features of the tool interface to show how it can be used to explore and analyze data.

A complete list of variables needed for the data preparation is provided in Appendix A. Instructions for installing the ELSTAR tool using a MAC system are provided in Appendix B. Screen shots of the different tool features are provided in Appendix C.

## Section 1: ELSTAR Download and Initialization

The ELSTAR is a statistical analysis tool developed using the open-source software<sup>1</sup> called R. It is stored in a self-contained ELSTAR folder on the user's machine. The user must download and unzip the contents of the folder from a secure folder in a cloud data platform (i.e., website) called Druva (for more information on system compatability requirements, see the next page on Downloading and Unzipping the ELSTAR tool). This section illustrates the process of accessing the secure folder, downloading, and unzipping the contents onto the user's machine.

## Accessing the Secure AIR ShareFile Folder

- 1. Click on the following link to access the AIR ShareFile platform: https://air.sharefile.com/f/foh0e631-7517-4435-98e6-83295b47857e
- 2. Enter the following user name and password when the login screen appears on the right side under Guest Sign In:
  - a. Username: <u>elptool2018@gmail.com</u>
  - b. Password (case-sensitive): elstarDownload\*2019\*

### Figure 1. Login page.

		AIR	
	AIR User Sign In	Guest	Sign In
classi	He is NOT authorized to store or process data with fication levels of CONFIDENTIAL or RESTRICTED; including but intent to proprietary code, unpublished research, or	)-ai	
Perso	mally identifiable information (PII) other than directory nation. ShareRie is for company business and restricted to scient users all information strong towards or restricted and		
	Sign In	Sig	n ân
		Remember Me	Perget Paroword?

3. Follow the directions on the following page to download and unzip the material in the folder, "ELSTAR".

<sup>&</sup>lt;sup>1</sup> For more information on R and RStudio, please visit <u>https://cran.r-project.org</u> and <u>https://shiny.rstudio.com/</u>.

# Downloading and Unzipping the ELSTAR for Windows Operating Systems<sup>2</sup>

The following instructions will assist users in downloading and installing the necessary software and files to use the ELSTAR tool on a computer running a Windows operating system (OS). For Windows users, an Intel-compatible platform running Windows 7 or later is needed. For Mac users, OS X Yosemite 10.10 or later is needed. Instructions for downloading and installing the necessary software and files on Mac computers are found in Appendix B. For questions about system compatibility for other operating systems, please contact the State Support Network at statesupportnetwork@air.org.

- 1. Click on "ELP accountability tool".
- 2. Click the download button. Note that the software may take a few minutes to download.
- 3. Right click on the elpShinyApp.zip attachment and select "Open". Some computers will automatically unzip this file. This will open the WinZip software to unzip the folder for use.

### Figure 2. Download the ELSTAR tool.

Folders > mlee@air.org > ELP Accountability Tool				
ELP Accountability Tool 🔛 More Options				
□ Items in this Folder & People on this Folder				
🕒 Download 💿 Preview 🕞 Copy 🚥 More				
Name A	Size	Uploaded	Creator	≡ ::::
Name ▲       □     ☆       Install Documents (MAC only)	Size	Uploaded 3:07 PM	Creator M. Lee	

NOTE: If the file was automatically unzipped, copy the folder into your C:/ directory and continue to Step 5 on the next page (page 4).

4. Click Unzip, select the  $\underline{C:}$  directory, and then click Unzip.

<sup>&</sup>lt;sup>2</sup> Please reference Appendix B for installation instructions for Mac computers.

#### Figure 3. Unzip the ELSTAR tool.

Procent Zip Files       elpShinyApp zip         Computer       Type Folder         Type Folder       ************************************	Unzip/Share	Edit	Backup	Tools	Settings	View I	lelp			
s	Location: C:\U:	sers\mlee\Do	ownloads 1 L	-click	O Selected Files	Search	Share Using	Files *	-	
Image ShinyApp zip Downloads       Image ShinyApp zip Type: Folder       Image ShinyApp zip Type: Folder         Undig: eSbinyApp zip Downloads       Image ShinyApp zip ShinyApp zip	Files		>		nyApp.z	ip		Sharing	7/16/2018	Unzip All Files
Undre affolinitien die         Image affolinitien				еір Тур	ShinyApp e: Folder				//10/2018	C:\Us\elpS
Paronitary     Computer       Computer     2 dasket/050533543d/8bcbbb1     a sample/figurestemp       Computer     a thinyedu.vvy	😋 🖉 🗢 My	PC → Com	puter )OS	Disk (C:)	,			•   <del>•</del>		· [] [] (
ktools sampleFigures	Favorites Libraries Libraries Computer (93: Source) Computer (93: Computer	Compute 2daa9ect 3 atic 3 dist 2 ECLS_K 2 ECLS_K	er Dos6163395e3c Data Training App (usual) App (usual) Files Files (x86) Data ols	6686686	shinyedsurvey ShinyEdSurvey Temp TIMSS Users					

It will then take a few minutes to unzip the folder. Note that once copied, this hyperlink (C:\elpShinyApp) should work to open the folder containing the ELSTAR.

NOTE: The templates that will be used to prepare the data files for import (in Section 2 and Section 3) are located in this unzipped folder (called "templateMaster" and "templateYear"). If you have already prepared your data files, continue to Step 5.

Figure 4. Downloaded ELSTAR.

inize	,	New folder		
F	Name	Date modified	Туре	Size
	퉬 elpshiny	7/30/2018 6:32 PM	File folder	
l.	퉬 GoogleChromePortable	2/21/2018 9:31 PM	File folder	
	퉬 R-Portable	2/21/2018 9:32 PM	File folder	
	1. Master	7/6/2018 3:39 PM	Microsoft Excel Comma Se	787 KB
	🛃 2. previousYear	5/24/2018 10:23 AM	Microsoft Excel Comma Se	1,137 KB
	👪 3. currentYear	5/24/2018 10:23 AM	Microsoft Excel Comma Se	1,123 KB
Ξ	🚳 run	2/21/2018 12:01 AM	Windows Batch File	1 KB
	runShinyApp	10/13/2017 2:57 PM	R File	1 KB
	E ShinyApp	10/17/2018 4:02 PM	LOG File	3 KB
6	templateCurrentYear	1/26/2018 3:21 PM	Microsoft Excel Comma Se	1 KB
5	templateMaster	7/16/2018 9:28 AM	Microsoft Excel Comma Se	1 KB
6	templatePreviousYear	1/26/2018 3:21 PM	Microsoft Excel Comma Se	1 KB

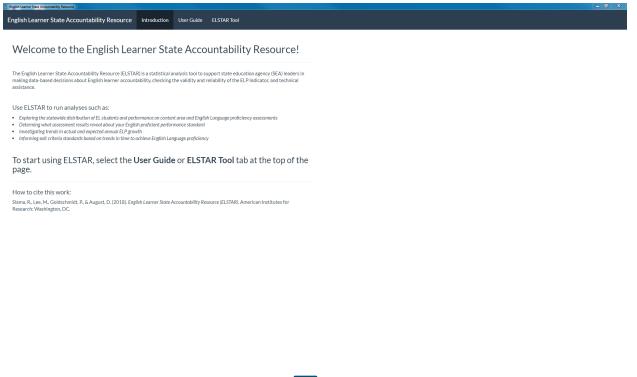
5. To load the tool, double-click *run*.

#### Figure 5. Run the ELSTAR tool.

anize 🔻 🛛 Include in library 👻 Share wit	h ▼ New folder		
F Name	Date modified	Туре	Size
elpshiny	7/30/2018 6:32 PM	File folder	
GoogleChromePortable	2/21/2018 9:31 PM	File folder	
📔 🔋 🕌 R-Portable	2/21/2018 9:32 PM	File folder	
1. Master	7/6/2018 3:39 PM	Microsoft Excel Comma Se	787 KB
2. previousYear	5/24/2018 10:23 AM	Microsoft Excel Comma Se	1,137 KB
2 currentVear	5/24/2018 10:23 AM	Microsoft Excel Comma Se	1,123 KB
🔓 🗏 🚳 run	2/21/2018 12:01 AM	Windows Batch File	1 KB
runShinyApp	10/13/2017 2:57 PM	R File	1 KB
ShinyApp	10/17/2018 4:02 PM	LOG File	3 KB
templateCurrentYear	1/26/2018 3:21 PM	Microsoft Excel Comma Se	1 KB
templateMaster	7/16/2018 9:28 AM	Microsoft Excel Comma Se	1 KB
templatePreviousYear	1/26/2018 3:21 PM	Microsoft Excel Comma Se	1 KB

Clicking run executes a Windows Batch File, loading the tool in a self-contained browser window.

#### Figure 6. Load the ELSTAR tool.





## **Section 2: Data Preparation**

The ELSTAR is a statistical analysis tool that requires the preparation and upload of the user's data into a particular structure, saved as an Excel or .csv file. This section provides the user with an overview of the steps required for data preparation.

Note: If you have already prepared your data, please proceed to Section 3 on page 11.

## Data Preparation for Master, Previous, and Current Year files

Detailed variable descriptions that correspond to the variable names in the following charts (Charts 1-3) are provided in Appendix A. There must be a common student identifier across all three files for the tool to function properly. The student identifiers and all other information provided in the charts are mock data.

Note that there should be a placeholder for all variables in the data set, even if the user does not collect a particular variable. Consult the Codebook in Appendix A for variable descriptions necessary for import.

The user will need to prepare the following three .csv files for import into the tool:

- 1. ELP master file: The ELP master file contains the **most recent demographic information** and baseline test information on a specific set of variables (please see Appendix A on page A-1).
- 2. Previous Year update file: The "Previous Year" file contains basic school, district, and assessment data for all the students in the state, for the **previous school year**. Assessment data include the statewide reading/language arts, mathematics, and English language proficiency assessments<sup>3</sup> (only applicable for current English learners).
- 3. Current Year update file: The "Current Year" file contains the same information contained in the "Previous Year" file but for the **current school year**. If the statewide assessment has not yet been administered, Previous Year data should come from two year's prior and Current Year data should come from the prior year.

**Note:** ELSTAR allows for the import of variables outside of those contained in the master, previous year, and current year codebooks. All variables described in the Codebook in Appendix A must be included in the data files in order for additional variables to import. More details on this feature are described in Section 4: Data Exploration. Details for importing additional variables are covered in the Data Preparation for Additional Variables portion of Section 2: Data Preparation (page 9).

Charts 1–3 on the following pages (pages 7–8) include sample tables based on mock data for each of the three files. As noted above, versions of the templates are located in the unzipped folder (highlighted in Figure 7).

<sup>&</sup>lt;sup>3</sup> Future iterations of the tool may consider incorporating other statewide content area assessments.

ize 🔻 🛛 Include in library 🔻 🛛 Share w	ith 🔻 New folder		
A Name	Date modified	Туре	Size
elpshiny	7/30/2018 6:32 PM	File folder	
GoogleChromePortable	2/21/2018 9:31 PM	File folder	
R-Portable	2/21/2018 9:32 PM	File folder	
1. Master	7/6/2018 3:39 PM	Microsoft Excel Comma Se	787 KB
2. previousYear	5/24/2018 10:23 AM	Microsoft Excel Comma Se	1,137 KB
3. currentYear	5/24/2018 10:23 AM	Microsoft Excel Comma Se	1,123 KB
🔍 run	2/21/2018 12:01 AM	Windows Batch File	1 KB
🔳 runShinyApp	10/13/2017 2:57 PM	R File	1 KB
ShinyApp	10/17/2018 4:02 PM	LOG File	3 KB
templateCurrentYear	1/26/2018 3:21 PM	Microsoft Excel Comma Se	1 KB
templateMaster	7/16/2018 9:28 AM	Microsoft Excel Comma Se	1 KB
templatePreviousYear	1/26/2018 3:21 PM	Microsoft Excel Comma Se	1 KB

Chart 1. ELP master file.<sup>4</sup>

STID	Gender	Ethnicity	SWD	SWD_Category	FRL	E	Parental_Opt_Out	Exited	NEL	SIFE	ELP_Level_Initial	ELP_SS_Initial
1	0	3	1	1	0	1	0	1	0	0	NA	NA
2	1	4	0	0	1	0	0	1	1	0	NA	NA
3	0	1	1	1	0	0	0	0	0	1	NA	NA
4	0	2	1	1	1	1	0	1	0	1	NA	NA
5	0	8	0	0	1	0	0	0	1	0	NA	NA
6	2	6	0	0	1	1	1	1	0	0	NA	NA
7	1	99	0	0	1	1	0	1	0	0	NA	NA

<sup>&</sup>lt;sup>4</sup> Please refer to the codebook in Appendix A for variable definitions.

### Chart 2. Previous Year data file one.

STID	School_ Code	District_Code	Grade	ELP_Attained	ELP_Level	ELP_SS	ELP_Test_Occasions	Math_SS	Reading_SS	ELP_ Listening	ELP_ Speaking	ELP_ Writing	ELP_ Reading
1	321	1001	12	NA	NA	NA	8	NA	NA	3	3	3	2
2	324	1002	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	324	1002	12	NA	NA	NA	5	NA	NA	4.2	4.2	4.2	5.2
4	321	1001	12	NA	2.3	515	10	NA	NA	1.3	5.3	3.3	3.3
5	324	1002	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
6	320	1003	12	NA	NA	NA	9	NA	NA	5.5	1.5	4.5	1.5
7	324	1002	12	NA	NA	649	9	NA	NA	2.6	1.6	5.6	2.6
8	322	1001	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Chart 3. Current Year data file one.

STID	School_ Code	District_Code	Grade	ELP_Attained	ELP_Level	ELP_SS	ELP_Test_Occasions	Math_SS	Reading_SS	ELP_ Listening	ELP_ Speaking	ELP_ Writing	ELP_ Reading
1	321	1001	11	NA	NA	NA	8	550	412	3	3	3	2
2	324	1002	1	NA	NA	NA	8	NA	NA	2	1	5	5
3	324	1002	3	NA	NA	NA	5	NA	NA	4	4	4	5
4	321	1001	11	NA	2	515	10	NA	NA	1	5	3	3
5	324	1002	4	NA	NA	NA	9	466	516	4	5	1	5
6	320	1003	6	NA	NA	NA	9	NA	NA	5	1	4	1
7	324	1002	5	NA	NA	649	9	NA	NA	2	1	5	2
8	322	1001	5	NA	4	NA	9	NA	NA	4	2	5	2

## **Data Preparation for Additional Variables**

ELSTAR allows for the import of variables outside of those contained in the master, previous year, and current year codebooks. All variables described in the Codebook in Appendix A must be included in the data files in order for additional variables to import.

It is advised to collapse variables with a large number of unique values into smaller categories, as the ELSTAR tool is programmed to provide every unique value from each variable as options once uploaded. Collapsing values in categories will result in a more manageable set of selections. These variables can be used to drill down on your subset of data.

Charts 4–5 are two sample tables based on mock data for importing additional variables into the ELSTAR tool. The columns highlighted in green are hypothetical variables and values that could be imported into the tool. While it is advised to prepare values for ease of use, there are no technical limitations to the number of variables and values that can be imported.

STID	Gender	Ethnicity	SWD	SWD_Category	FRL	Έ	Parental_Opt_Out	Exited	NEL	SIFE	ELP_Level_Initial	ELP_SS_Initial	Unique Status Code	504 Plan	State Transferred From
1	0	3	1	1	0	1	0	1	0	0	NA	NA	2	NA	AR
2	1	4	0	0	1	0	0	1	1	0	NA	NA	3	Yes	AL
3	0	1	1	1	0	0	0	0	0	1	NA	NA	5	NA	MD
4	0	2	1	1	1	1	0	1	0	1	NA	NA	1	NA	MD
5	0	8	0	0	1	0	0	0	1	0	NA	NA	4	No	IL
6	2	6	0	0	1	1	1	1	0	0	NA	NA	3	No	SD
7	1	99	0	0	1	1	0	1	0	0	NA	NA	2	NA	VT

Chart 4. Importing additional variables into the ELP master file.

STID	School_ Code	District_ Code	Grade	ELP_Attained	ELP_Level	ELP_SS	ELP_Test_Occasions	Math_SS	Reading_SS	ELP_ Listening	ELP_ Speaking	ELP_ Writing	ELP_ Reading	Absences
1	321	1001	11	NA	NA	NA	8	550	412	3	3	3	2	2
2	324	1002	1	NA	NA	NA	8	NA	NA	2	1	5	5	5
3	324	1002	3	NA	NA	NA	5	NA	NA	4	4	4	5	5
4	321	1001	11	NA	2	515	10	NA	NA	1	5	3	3	3
5	324	1002	4	NA	NA	NA	9	466	516	4	5	1	5	5
6	320	1003	6	NA	NA	NA	9	NA	NA	5	1	4	1	1
7	324	1002	5	NA	NA	649	9	NA	NA	2	1	5	2	2
8	322	1001	5	NA	4	NA	9	NA	NA	4	2	5	2	2

Chart 5. Importing additional variables into the ELP current year file.

## **Section 3: Data Import**

Now that the user has downloaded the tool onto their machine (Section 1) and prepared the data set (Section 2), the user is ready to import the data into the ELSTAR. This section provides detailed instructions for importing the data into the tool.

## **Data Import Preparation**

The following tips will help ensure that data are properly imported into the tool:

- 1. Prior to import, ensure that variable naming conventions are consistent with those in the template provided in Section 2. All variable names and values must match those expected by the tool across data sets.
- 2. Consult Appendix A for variable names, descriptions, and values for data import.

## **Data Upload**

English Learner State Accountability Resource

The following steps detail the procedure for uploading the prepared data into the tool:

1. Click on "ELSTAR Tool".

Figure 8. ELSTAR Tool link.

English Learner State Accountability Resource Introduction User Guide ELSTAR Tool

### Welcome to the English Learner State Accountability Resource!

The English Learner State Accountability Resource (ELSTAR) is a statistical analysis tool to support state education agency (SEA) leaders in making data-based decisions about English learner accountability, checking the validity and reliability of the ELP indicator, and technical assistance.

Use ELSTAR to run analyses such as:

- Exploring the statewide distribution of EL students and performance on content area and English Language proficiency assessments
- Determing what assessment results reveal about your English proficient performance standard
- Investigating trends in actual and expected annual ELP growth
- Informing exit criteria standards based on trends in time to achieve English Language proficiency

## To start using ELSTAR, select the **User Guide** or **ELSTAR Tool** tab at the top of the page.

#### How to cite this work:

Slama, R., Lee, M., Goldschmidt, P., & August, D. (2018). English Learner State Accountability Resource (ELSTAR). American Institutes for Research: Washington, DC.

2. Click on "Browse".

#### Figure 9. Data upload function.

	D Open	×
$\equiv$ 1. Import your two data years $\equiv$	🕒 🗸 🖉 🕹 Libraries 🕽 Documents 🕽 Data 🕨	- 4 Search Data
NOTE: Data can be imported as a csv, xls, or xlsx file.	Organize 🔻 New folder	H 🕶 🔟 🔞
1. Choose Master File	elpShinyApp     Automization     Data Analytic-Automated Report	Arrange by: Folder -
Browse No.	NAEP R Program     Name	Date modified Type
	STEM  Automating data figures  Automating data figures  Automating data figures	10/17/2018 4:09 PM File folder 7/6/2018 3:39 PM Microsoft Excel C
2. Choose File from Previous Year	Recent Places	5/24/2018 10:23 AM Microsoft Excel C
Browse No file selected	Comments  Music	5/24/2018 10:23 AM Microsoft Excel C
3. Choose File from Current Year	<pre>     Wusic     Fictures     Videos </pre>	
Browse No file selected	SDisk (C.)	m
	File game	Microsoft Excel Comma Separa ▼     Qpen      Cancel

3. Select data file to upload and click "Open".

**NOTE:** Clicking "All Files" on the dropdown above "Open" shows all file types to import (.xlsx files or .csv files might be obscured by default)

#### Figure 10. Open data file.

🖉 🗢 📕 🕽 Libraries 🕽 Documents	Data )	<ul> <li>✓ 4 Search Data</li> </ul>
Organize 🔻 New folder		≣≕ ▼ 🗔 🔞
elpShinyApp Automization	Documents library	Arrange by: Folder 🔻
Data Analytics-Automated Report NAEP R Program	Name	Date modified Type
🐌 STEM –	Attic	10/17/2018 4:09 PM File folder
퉬 Automating data figures	ab master 10.17.18	7/6/2018 3:39 PM Microsoft Excel C
🔠 Recent Places	currentYear_10.17.18	5/24/2018 10:23 AM Microsoft Excel C
	previousYear_10.17.18	5/24/2018 10:23 AM Microsoft Excel C
🗃 Libraries	=	
Documents		
J Music		
E Pictures		
Videos		
🖳 Computer		
SDisk (C:)		4
File <u>n</u> ame:		Microsoft Excel Comma Separa 🔻
File <u>n</u> ame:		Microsoft Excel Comma Separa     Microsoft Excel Comma Separated V

4. Repeat for the other two required data files.

## **Troubleshooting Data Error Messages**

The tool features several safeguards to ensure data are properly formatted during the data upload process. See the Codebook in Appendix A for a full list of variable names and their acceptable values. The following are some common errors that the user might encounter.

### Variable Name Errors

The tool checks all variable names in the file to ensure that they match the names that the tool expects (i.e., the variable names in the codebook). The following image shows a sample warning message that a user would receive after attempting to upload a data file containing incorrect variable names. The message indicates that the column names are incorrect.

#### Figure 11. Incorrect column names.

$\equiv$ 1. Import your two data years $\equiv$
NOTE: Data can be imported as a csv, xls, or xlsx file.
1. Choose Master File
Browse dataErrors.xlsx
Upload complete
2. Choose File from Previous Year
Browse No file selected
3. Choose File from Current Year
Browse No file selected
File column names should include the following: STID

To correct the variable names, open the data file and make the necessary corrections or remove any unnecessary columns. In the following example table, the variable name StudentID should be changed to STID.

#### Figure 12. Student ID naming.

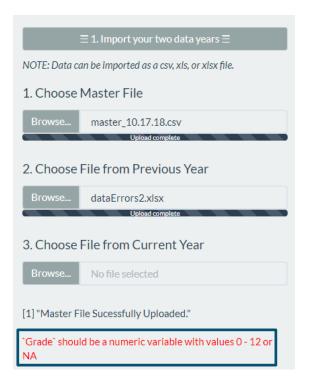
É	^	В	С	D	E	F	G	н	I	J	К	L	м
	StudentID	Gender	Ethnicity	SWD	SWD_Category	FRL	EL	Parental_Opt_Out	Exited	NEL	SIFE	ELP_Level_Initial	ELP_SS_Initial
2	1	0	3	1	. 1	0	1	0	1	0	0	NA	NA
з	2	1	3	0	NA	1	0	NA	0	1	0	NA	NA
4	3	0	3	1	. 2	0	0	NA	0	0	1	NA	NA
5	4	0	3	1	. 1	1	1	0	1	0	1	NA	NA
6	5	0	1	0	NA	1	0	NA	0	1	0	NA	NA

### Variable Value Errors

The tool checks all values for each variable in the file to ensure that they match the format that the tool expects (e.g., numeric variables are formatted as numeric, character variables are formatted as characters). The following image shows a sample warning message that a user would receive after attempting to upload a data file containing variables with incorrect values.

The message indicates that at least one value for the Grade and ELP\_Listening variables is incorrect.

#### Figure 13. Incorrect variables message.



To correct the variable values, open the data file and make the necessary corrections. In the following sample warning message, the user receives an error because, as noted in the codebook in Appendix A starting on page A-1, the tool only accepts values 0-12 for the variable Grade. Grade levels greater than 12 should be either corrected, removed, or changed to NA.

#### Figure 14. Correcting variable values.

	А	В	С	D	E
1	STID	School_Co	District_C	Grade	ELP_Attair
2	1	321	1001	12	NA
3	2	324	1002	12	NA
4	3	324	1002	12	NA
5	4	321	1001	12	NA
6	5	324	1002	15	NA

## **Section 4: Data Exploration**

This section provides a guide for navigating the ELSTAR. Once you have uploaded your data to the tool (Section 3), you are able to generate a series of analyses based on these data. The tool features dropdowns that help filter the imported data set and allows users to generate figures that

- 1. Examine the distribution of English learners across different English language proficiency levels, domains of the state ELP assessment, grades, and initial grades.
- 2. Compare the content area performance of current English learners (EL) to ELs who have attained English proficiency,<sup>5</sup> ELs who have been exited from Language Instruction Education Programs (LIEPs), ELs whose parents or caregivers have opted them out of LIEPs, and students never classified as English learners ("never EL").<sup>6</sup>

## Selecting Parameters that Describe the Data Subset of Interest

The tool automatically imports the values from the uploaded data into dropdown menus to easily identify a desired subset of data to explore. The sidebar interface features (a) dropdowns and (b) dropdown checkboxes for ease of use in selecting values of interest.

1. **Dropdowns** allow for the selection of one value. By default, all values from the data set area selected.

### Figure 15. Dropdown menu for year selection.

Year		
All Years	•	
All Years		
Current Year		
Prior Year		

2. **Dropdown checkboxes** allow for the selection of multiple values. By default, all values from the data set area selected.

<sup>&</sup>lt;sup>5</sup> In some states, ELs who have attained proficiency must meet additional criteria to be exited from LIEPs.

<sup>&</sup>lt;sup>6</sup> Currently, students whose parents or caregivers have chosen to opt out of a LIEP program are counted in the group, but a separate code will be created to identify these students.

#### Figure 16. Dropdown for district selection.

Select District(s):	
1002, 1003, NA	•
Select All	Deselect All
1001	
1002	×
1003	~
NA	~

Once an input is changed, a subset of the original data set automatically appears in the Student Subset tab.

Current ELP	Initial ELP Level	ELD D-	rformance	Content Are		Contort A	Dorform	anas D	plot Student			
	by Grade at Entry	by Don		Boxplot by C					Subset			
ow 10 🔻 entrie	es								Sear	rch:		
School_Code	District_Code	STID \$	Gender	Ethnicity	SWD	SWD_Category \\$	FRL	EL 🔶	Parental_Opt_Out	Exited \$	NEL 🔅	SIFE
21	1001	1	0	3	1	1	0	1	0	1	0	(
24	1002	2	1	3	0		1	0		0	1	
24	1002	3	0	3	1	2	0	0		0	0	
21	1001	4	0	3	1	1	1	1	0	1	0	
24	1002	5	0	1	0		1	0		0	1	
20	1003	6	0	3	0		1	1	0	1	0	
24	1002	7	1	3	0		1	1	1	1	0	
22	1001	8	1	2	1	1	1	0		0	1	
20	1003	9	0	3	0		0	0		0	1	
20	1003	10	1	1	0		1	0		1	0	

#### Figure 17. Student Subset tab data.

## **Generating Plots**

Once the user has selected a subset of data to examine, the user can generate figures by clicking on "Update Figures". Each dropdown selection (both default and changed by the user) will be reflected in your subset; therefore, the full data may not be reflected in a generated figure. It is important to note that figure generation may take a few moments to load depending on the size of the uploaded data files. A complete set of images for all available plots is provided in Appendix C.



#### Figure 18. Generating plots.

## **Customizing Plots**

By default, data in figures are presented in terms of total number of students. To display figures in terms of the percentage of students, users may change the "Plot Aggregation" dropdown to "Aggregate" as displayed in the following figure.

Figure 19. Customizing plots.

$\equiv$ 2. Explore your student data $\equiv$								
A. School Variables	B. Contextual Variables	C. Student Demographics						
D. Plot Tools	E. Variables of Interest							
Plot Aggrega	ation							
Total		•						
Total								
Aggregate								

## **Subsetting Additional Variables**

If you have an additional variable to integrate into ELSTAR, these will be shown in tab E, the Variables of Interest tab. Refer to Section 2: Data Preparation for Additional Variables for details regarding the inclusion of additional variables in ELSTAR. Additional variables of interest can be explored in the combined data set uploaded into ELSTAR. The values of these variables are populated into dropdown checkboxes in the Variables of Interest tab.

### Figure 20. Variables of interest.

	≡ 2. Explore your s	tudent data Ξ				
A. School Variables	B. Contextual Variables	C. Student Demographics				
D. Plot Tools	E. Variables of Interest					
Unique.Stat	<del>is.Code:</del>					
1, 2, 3, 4, 5,	6, 7, 8	•				
X504.Plan:						
No, Yes, NA	Ą	-				
State.Transferred.From:						
AK, AL, AR, AZ, CA, CO, CT, DE, FL, GA, HI, IA, ID, IL, IN 🗸						
Absences:						
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18 -						

Note that because all unique values from each variable are included as options in the dropdown checkbox, special consideration is needed for variables with a large number of unique values (e.g., numeric variables to several decimal places). For example, numeric variables to several decimal places could show thousands of options to select, populating the dropdown with an overwhelming number of selections. Therefore, variables with a large number of unique values should be collapsed. Using our numeric variable example, rounding to the nearest integer would result in a more manageable set of selections for the dropdown. These variables can be used to drill down on your subset of data.

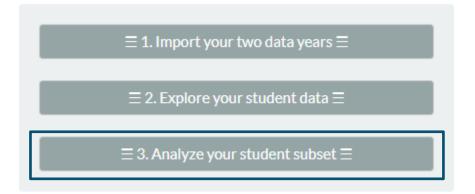
## Analyzing a Subset of Student Data

Once a subset has been selected, student data can be further analyzed in section three of the ELSTAR tool, "Analyze your student subset." The ELSTAR tool features selections that generate figures to

- 1. examine the relationship between a composite scale score and the sum of individual domain scores,
- 2. explore the distribution of English learners' performance on content area assessment scale scores,
- 3. understand expected growth in ELP performance over time and explore how long it has taken students with different initial ELP levels to reach ELP proficiency, and

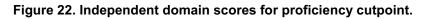
4. examine the probability of reaching English proficiency and exiting from LIEPs for different subpopulations of ELs.

Figure 21. Analyze subset of student data feature.



# Exploring Proficiency Cutpoints Criteria Based on ELP Assessment Scores

Users can input a particular composite score or set of domain scores to better understand the impact of a particular proficiency threshold. First set each domain level for Reading, Writing, Speaking, and Listening (by default, ELSTAR automatically populates this box with the maximum ELP score minus one). States who are wishing to use independent domain scores for setting proficiency cutpoint may also do so.



≡ 3. Analyz	e your student subset $\equiv$					
Explore Proficiency Cutpoint Criteria	Probability Analysis (beta)					
Proficiency Cutpoint Inputs						
Composite Only 🔹						
Composite:						
5						
Update Proficiency Cutpoint						

The ELSTAR will regenerate the figures based on the proficiency cutpoint input by clicking "Update Proficiency Cutpoint" and is reflected in all tabs of the main panel. The composite proficiency cutpoint selected also influences the following four figures (on the following pages).

1. The "ELP Domain/Composite Score by ELP Attainment Status" tab examines the relationship between a composite scale score and the sum of individual domain scores.

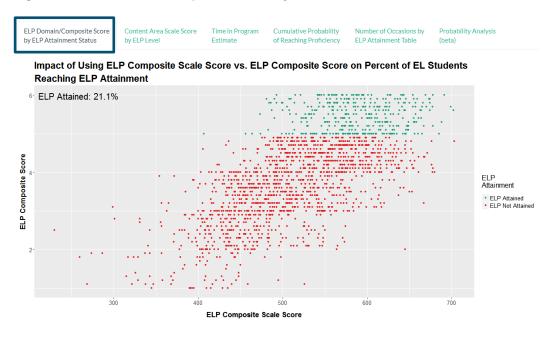
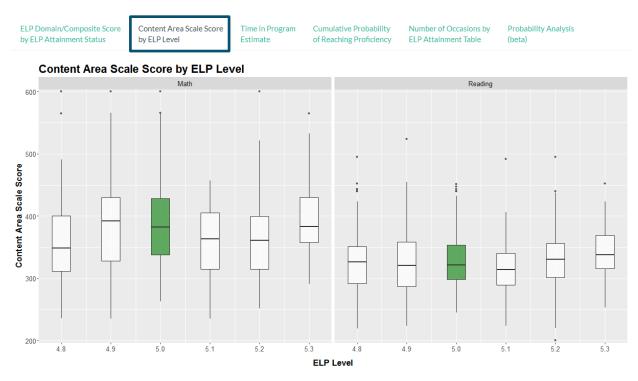


Figure 23. ELP Domain/Composite Score by ELP Attainment Status tab.

The purpose of this tab is to help the SEA examine the relationship between a composite scale score and the sum of individual domain scores. A close relationship is indicated by a tight band of points that increases from left to right. The chart allows the SEA to set a particular composite score for exiting students from EL status. This allows the SEA to determine whether a given proficiency cutpoint identifies the same set of students using a composite score as a particular domain sum score.

The ELP\_Attained (green) students are the same students above the composite cut and the domain sum score cut. There will not be a 100% match; however, the SEA should want to set the cut score in such a way as to minimize the discrepancy between the two scores. That is, by raising (or lowering) the composite score, it reduces (or increases) the number of students who meet the domain sum score cut.

2. The "Content Area Scale Score by ELP Level" tab explores the distribution of English learners' performance on content area assessment scale scores.



#### Figure 24. Content Area Scale Score by ELP Level tab.

The purpose of this tab is to explore the distribution of ELs' performance on the content area assessment scale scores, by ELP level. This series of box plots shows the distribution of scale score performance for students by ELP performance level. The range of values displayed is determined by the value set in the proficiency cutpoint input box.

3. The "Time in Program Estimate" tab helps users better understand expected growth in ELP performance over time.

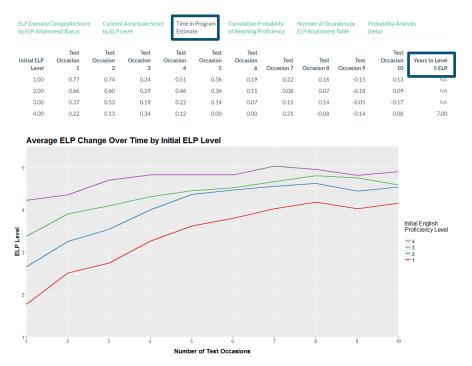


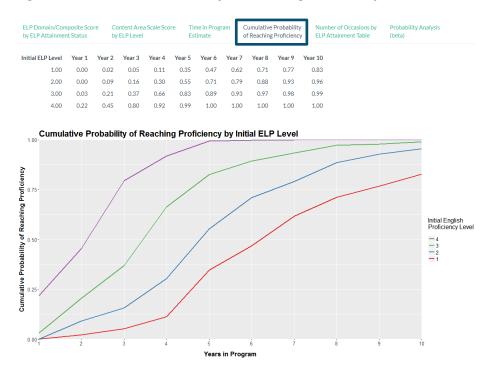
Figure 25. Time in Program Estimate tab.

The purpose of this tab is to provide the SEA with a snapshot of expected growth in ELP performance over time for the ELs in the state. The display examines different profiles of EL students' initial ELP levels and time in an EL program. This information can provide an empirical basis for setting growth expectations for ELs at different initial ELP levels.

The last column (Years to ELP) estimates how long it will take students at each initial English proficiency level on the state ELP assessment to reach proficiency. This estimate draws on what is known about the role of initial ELP and grade in time to proficiency: lower grades and proficiency levels will have higher percentages of students gaining one or more proficiency levels per year, whereas higher grades and proficiency levels take longer to reach the next proficiency level (Cook et al., 2008).

The chart also provides information on whether growth stagnates overall or for students with specific initial ELP levels, which may help target EL services. Considerations for the EL progress indicator for middle and high schools are that these groups may show more students in the flatter growth region, and the SEA model may want to account for this phenomenon in the business rules.

4. The "Cumulative Probability of Reaching Proficiency" explores how long it has taken students with different initial ELP levels to attain ELP.



#### Figure 26. Cumulative Probability of Reaching Proficiency tab.

The purpose of this tab is to explore how long it has taken students with different initial ELP levels to reach proficiency. This information can help set the exit time frame. The SEA can use this chart, along with other information and stakeholder input, to set exit time frames. For example, the SEA may set the time to exit at the point where 50% of the students have attained ELP proficiency. The SEA may ask stakeholders what percentage to use to set the criteria (e.g., 40%, 50%). A higher percentage exit results in a longer time to exit.

## **Running Predictive Analyses**

Users may be interested in understanding the probability that a student will reach English proficiency and exit EL status, based on the state's defined standardized, statewide exit procedure and taking into account student variables such as ELP test occasions and initial level of proficiency. To conduct this analysis, the user must first select an outcome (e.g., ELP attainment). The user can also select student variables to explore that might influence time to proficiency (e.g., initial level of proficiency, students with interrupted formal education). After all selections have been made, the user should select "Run Regression."

### Figure 27. Run Regression function.

$\equiv$ 3. Analyze	your student subset $\equiv$
Explore Proficiency Cutpoint Criteria	Probability Analysis (beta)
Regression Outcome	
<ul> <li>ELP Attainment</li> </ul>	
Exit	
Listening	
Speaking	
<ul> <li>Writing</li> </ul>	
Reading	
Regression Inputs	
Initial ELP Level	
Student with Interrup	ted Formal Education (SIFE)
🗷 Students w/ Disability	,
Free/Reduced Lunch	
Ethnicity	
Gender	
Account for non-linea	r growth
Run Regression	

The output of the analysis is printed in the main panel. An example of this output is displayed on the following page.

#### Figure 28. Analysis output example.

ELP Domain/Composite Score by ELP Attainment Status	Content Area Scale Score by ELP Level	Time in Program Estimate	Cumulative Probability of Reaching Proficiency	Number of Occasions by ELP Attainment Table	Probability Analysis (beta)	
Generalized linear mixed mod	el fit by maximum likelihoo	od (Laplace				
Approximation) [glmerMod] Family: binomial ( logit )						
Formula: ELP Attained ~ ELP		Test Occasions +				
(1   School_Code)						
Data: elpImport						
AIC BIC logLik d 5718.1 5778.4 -2850.1	eviance df.resid 5700.1 5988					
5/16.1 5//6.4 -2650.1	2/00.1 2900					
Scaled residuals:						
Min 1Q Median	3Q Max					
-2.1455 -0.5253 -0.4184 -0.3	137 3.3746					
Random effects: Groups Name Var	iance Std.Dev.					
School Code (Intercept) 9.8						
Number of obs: 5997, groups:						
Fixed effects:						
	Std. Error z value Pr(> z )					
	0.09143 -20.381 < 2e-16					
ELP_Level_Initial2 0.63294 ELP Level Initial3 0.82070	0.10036 8.178 2.90e-16					
ELP Level Initial4 1.26447						
ELP_Level_Initial5 2.90904	0.14170 20.530 < 2e-16	5 ***				
ELP_Level_Initial6 3.44714	0.51325 6.716 1.86e-11	1 ***				
SWD1 0.02910	0.11577 0.251 0.802					
ELP_Test_Occasions -0.05691	0.01178 -4.830 1.36e-06	6 ***				
 Signif. codes: 0 '***' 0.00	1 '**' 0 01 '*' 0 05 ' ' 0	1 1 1 1				
518H111 COUCST 0 0100						
Correlation of Fixed Effects						
· · · = =	ELP_L_I3 ELP_L_I4 ELP_L_I5	ELP_L_I6 SWD1				
ELP_Lv1_In2 -0.655						
ELP_Lv1_In3 -0.648 0.596	0.543					
ELP_Lvl_In4 -0.577 0.542 ELP Lvl In5 -0.430 0.426	0.543 0.428 0.393					
ELP_LV1_INS -0.430 0.420 ELP_LV1_IN6 -0.115 0.118	0.119 0.110 0.088					
SWD1 -0.203 0.075	0.113 0.124 0.117	0.039				
		-0.036 -0.024				

The purpose of this tab is to explore the probability of ELP attainment or exit for different subpopulations of ELs. These results can help the SEA identify where fewer students are proficient on your ELP assessment. It can serve as a monitoring tool for the SEA to identify gaps in performance among ELs in the state.

The results are based on a linear probability model, and the estimates can be interpreted as probabilities. If the probability associated with the estimated (Pr(>|z|)) is greater than .05, then it is likely that the estimate is not significantly different from zero. This indicates that the specific input does not statistically impact the probability of a student attaining EL proficiency or exiting.

## **Appendix A. Codebook**

## **Master Variable Descriptions**

- *STID* Student ID; needs to be a unique ID.
- Gender Gender // Conditions: Numeric; Values 0, 1, 2, or NA
  - Male = 0;
  - Female = 1;
  - Nonbinary = 2;
  - NA
- Ethnicity Ethnicity // Conditions: Numeric; Values 1 8, 99, or NA
  - White = 1;
  - Black = 2;
  - Hispanic = 3;
  - Asian = 4;
  - Amer. Indian/Alaska = 5;
  - Hawaii/Pac. Islander = 6;
  - Bi-racial = 7;
  - Other = 8;
  - Omitted = 99;
  - NA
- SWD Student with a disability // Conditions: Numeric; Values 0, 1, or NA
  - Not classified as a SWD = 0;
  - Student with a disability = 1;
  - NA
- SWD\_Category Disability Category // Conditions: Numeric; Values 1, 2, 3, or NA
  - Specific Learning Disability = 1;
  - Speech and language impairment = 2;
  - Other = 3;
  - NA
- FRL Free & Reduced Lunch // Conditions: Numeric; Values 0, 1, or NA
  - Does not qualify for FRL = 0;
  - Student qualifies for Free/Reduced Lunch = 1;
  - NA
- EL English Learner // Conditions: Numeric; Values 0, 1, or NA
  - Not classified as an EL = 0;
  - English Learner = 1;
  - NA

- **Parental\_Opt\_Out** Parents have waived ELD services. An informed, voluntary decision by the parent to not have the child placed in any separate, specialized ELD service or instructional program. A "waiver" indicates a desire by the parent to waive the child from participation in all or some of the ELD programs or services offered by the school // Conditions: Numeric; Values 0, 1, or NA
  - Parents have not waived ELD services = 0;
  - Parents have waived ELD services = 1;
  - NA
- *Exited* ELs exited from LIEPs; a student who meets the full state criteria for exiting from LIEPs // Conditions: Numeric; Values 0, 1, or NA
  - Not exited from LIEPs= 0;
  - Exited from LIEPs= 1;
  - NA
- NEL Never-EL // Conditions: Numeric; Values 0, 1, or NA
  - Current or former Language Learner = 0
  - Never classified as a Language Learner = 1;
  - NA
- *SIFE* Student with Interrupted Formal Education // Conditions: Numeric; Values 0, 1, or NA
  - Not classified as a SIFE = 0;
  - Student with Interrupted Formal Education= 1;
  - NA
- *ELP\_Level\_Initial* English Language Learners Level Initial (i.e., at school entry) // Conditions: Numeric; Range of Values (e.g., 0–5) or NA
- *ELP\_SS\_Initial* English Language Learners Scale Score Initial (i.e., at school entry) // Conditions: Numeric; Values 0–3000 or NA

Figure 29. Master file codebook.

	A	В	с	D	E	F	G	н	I	J	K	L	м
1 S	TID	Gender	Ethnicity	SWD	SWD_Category	FRL	EL	Parental_Opt_Out	Exited	NEL	SIFE	ELP_Level_Initial	ELP_SS_Initial
2		Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric
												Range of 5	Range of 5
3		0, 1, 2, or NA	1 - 8, 99, or NA	0, 1, or NA	1, 2, 3, or NA	0, 1, or NA	0, 1, or NA	0, 1, or NA	0, 1, or NA	0, 1, or NA	0, 1, or NA	values or NA	values or NA
		Male = 0;	White = 1;	Not classified as a	Specific Learning	Does not qualify	Not classified as	Parents have not waived	Not exited from	Current or Former	Not classified as a		
		Female = 1;	Black = 2;	SWD = 0;	Disability = 1;	for FRL = 0;	an ELL = 0;	ELD services = 0;	LIEPs = 0;	English Learner	SIFE = 0;		
		Nonbinary = 2;	Hispanic = 3;	Student with a	Speech and language	Student qualifies	English Language	Parents have waived	Exited from	Student (EL) = 0;	Student with		
			Asian = 4;	disability = 1;	impairment = 2;	for Free/Reduced	Learner = 1;	ELD services = 1;	LIEPs = 1;	Never English	Interrupted Formal		
			Amer. Indian/Alaska = 5;		Other = 3;	Lunch = 1;				Learner Student	Education=1;		
			Hawaii/Pac. Islander = 6;							(NEL) = 1;			
			Bi-racial = 7;										
			Other = 8;										
4			Omitted = 99;										

## **Previous Year and Current Year Variable Descriptions**

- *STID* Student ID
- **School\_Code** School Identifier; needs to be a unique ID. For example, if a state typically appends school codes onto district codes to create a unique ID, use this combined value for the School ID variable.

- *District\_Code* District Identifier; does not need to be a unique ID (i.e., multiple school IDs can have the same District ID).
- Grade Grade // Conditions: Numeric; Values 0–12 or NA
  - Kindergarten = 0;
  - Grade 1 = 1;
  - ...
  - Grade 12 = 12;
  - NA
- *ELP\_Attained* a student defined as a 1 for ELP\_Attained reached a qualifying threshold on an English Language Proficiency Assessment // Conditions: Numeric; Values 0, 1, or NA
  - Did not attain English proficiency = 0;
  - Attained English proficiency = 1;
  - NA
- *ELP\_Level* English Language Proficiency Level // Conditions: Numeric; Range of Values (e.g., 0–5) or NA
- *ELP\_SS* English Language Proficiency Scale Score // Conditions: Numeric; Values 0– 3000 or NA
- *ELP\_Test\_Occasions* English Language Proficiency Test Occasions // Conditions: Numeric Values 0–15 or NA
  - 0 test occasions = 0;
  - -1 test occasions = 1;
  - ...
  - 15 test occasions = 15
- *Math\_SS* Math Assessment Scale Score // Conditions: Numeric; Values 0–3000 or NA
- *Reading\_SS* Reading Assessment Scale Score // Conditions: Numeric; Values 0–3000 or NA
- *ELP\_Listening* English Language Proficiency Assessment Listening Domain Level // Conditions: Numeric; Range of Values (e.g., 0–5) or NA
- *ELP\_Speaking* English Language Proficiency Assessment Speaking Domain Level // Conditions: Numeric; Range of Values (e.g., 0–5) or NA
- *ELP\_Writing* English Language Proficiency Assessment Writing Domain Level // Conditions: Numeric; Range of Values (e.g., 0–5) or NA
- *ELP\_Reading* English Language Proficiency Assessment Reading Domain Level // Conditions: Numeric; Range of Values (e.g., 0–5) or NA

### Figure 30. Previous and Current Year file codebook.

4	А	В	С	D	E	F	G	н	I	J	к	L	м	N
1	STID	School_Code	District_Code	Grade	ELP_Attained	ELP_Level	ELP_SS	ELP_Test_Occasions	Math_SS	Reading_SS	ELP_Listening	ELP_Speaking	ELP_Writing	ELP_Reading
2				Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric	Numeric
						Range of 5					Range of 5	Range of 5	Range of 5	Range of 5
3				0 - 12	0, 1, or NA	values or NA	0 - 3000 or NA	0 - 15, or NA	0 - 3000 or NA	0 - 3000 or NA	values or NA	values or NA	values or NA	values or NA
				Kindergarten = 0;	Not exited = 0;			0 test occasions = 0;						
				Grade 1 = 1;	Exited = 1;			1 test occasions = 1;						
4				Grade 12 = 12;				15 test occasions = 15;						
-														

## **Appendix B. ELSTAR Mac Installation**

Running the ELSTAR on a Mac requires users to download R and RStudio and installing each R package used in the tool.

## 1. Installing R and RStudio on a Mac

Mac users are required to download both R and RStudio. To do so, follow the instructions in this section or watch this video: <u>https://www.youtube.com/watch?v=GLLZhc\_5enQ</u>.

### 1a. Installing R

To install R on your Mac computer, follow these steps:

- 1. Go to https://cran.r-project.org/bin/macosx/.
- 2. Download the appropriate link for your system; this should be 3.5.1 and above.

### Figure 31. "R" download link.

	Lastest release:
R-3.5.1.pkg MD5-bash: 58eaff65fbd024267ef1e521e17e7f8 SHA1-bash: 7ec01bfa61ad686d5f4e4511e2fd17276d14965 (ca. 74MB)	R 3.5.1 binary for OS X 10.11 (El Capitan) and higher, signed package. Contains R 3.5.1 framework, R.app GUI 1.70 in 64-bit for Intel Macs, Tel/Tk 8.6.6 X11 libraries and Texinfo 5.2. The latter two components are optional and can be ommitted when choosing "custom install", they are only needed if you want to use the tcltic R package or build package documentation from sources.
	Note: the use of X11 (including tcltk) requires XQuartz to be installed since it is no longer part of OS X. Always re-install XQuartz when upgrading your macOS to a new major

- 3. You may be asked if you want to save or run a file *R*-3.5.1.*pkg*. Choose Save and save the file on the desktop or open it from your browser window. Click on the icon to run the executable (i.e., the *R*-3.5.1.*pkg* file).
- 4. You will be asked what language to install it in; choose English.
- 5. The R Setup Wizard will appear in a window. Continue to click "Next" at the bottom of the R Setup wizard window until a progress bar is generated and completes.
- 6. R should now be installed; click "Finish".
- 7. To start R, you can either follow Step 8 or 9.
- 8. Check if there is an R icon on the desktop of the computer that you are using. If so, double-click on the R icon to start R. If you cannot find an R icon, try Step 9 instead.
- 9. Use the Finder to search for "R" or "R 3.5.1"

Now that we have R installed, we need to download RStudio.

### 1b. Installing RStudio

- 1. Go to https://www.rstudio.com/products/rstudio/download/.
- 2. Scroll down to "Installers for Supported Platforms" and click the "RStudio 1.1.463 Mac OS X 10.6+ (64-bit)" link (Note: this version number may have changed since writing.)
- 3. Similar to the R download, you may be asked if you want to save or run a file RStudio-1.1.463.dmg. Choose "Save" and save the file on the desktop or open it from your browser window. Click on the icon to run the executable.

- 4. The RStudio Setup Wizard will appear in a window. Continue to click "Next" at the bottom of the R Setup wizard window until a progress bar is generated and completes.
- 5. RStudio should now be installed; click "Finish".
- 6. To start RStudio you can either follow Step 7 or 8.
- 7. Check if there is an RStudio icon on the desktop of the computer that you are using. If so, double-click on the RStudio icon to start "RStudio". If you cannot find an RStudio icon, try Step 8 instead.
- 8. Click on the "Start" button at the bottom left of your computer screen and then choose "All programs", and start "R" by selecting "RStudio" folder from the menu of programs and clicking on the "RStudio" icon.

With R and RStudio downloaded, we can move to initializing the ELSTAR tool.

### 2. Installing Packages

- 1. Open RStudio.
- 2. Copy and paste the following code script into the RStudio console; by default, the console should appear on the left portion):

#### Figure 32. Code for R installation.

```
dependencies <- c("shiny", "dplyr", "DT", "shinythemes", "shinyjs", "tools", "ggplot2
", "tidyr", "shinyWidgets", "ordinal","lme4","readxl","tidyr",
"shinycssoaders")
install.packages(dependencies)
lapply(dependencies, library, character.only = TRUE)</pre>
```

These three lines of code will install the dependent packages and load them using library. Note that when downloading these packages for the first time, it may take several minutes for the code to run.

The RStudio session should emit the following message that the packages have installed and loaded:

#### Figure 33. Package installation successful message.

```
package 'shiny' successfully unpacked and MD5 sums checked
package 'dplyr' successfully unpacked and MD5 sums checked
package 'DT' successfully unpacked and MD5 sums checked
package 'shinythemes' successfully unpacked and MD5 sums checked
package 'shinyjs' successfully unpacked and MD5 sums checked
package 'ggplot2' successfully unpacked and MD5 sums checked
package 'tidyr' successfully unpacked and MD5 sums checked
package 'shinyWidgets' successfully unpacked and MD5 sums checked
package 'shinyWidgets' successfully unpacked and MD5 sums checked
package 'ordinal' successfully unpacked and MD5 sums checked
package 'ime4' successfully unpacked and MD5 sums checked
package 'readxl' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\mlee\AppData\Local\Temp\RtmpCysHF7\downloaded_packages >
```

## 3. Running ELSTAR in RStudio

1. Open RStudio and type:

getwd()

Note the output of this function. It should show the location for the files, such as

"/Users/Michael"

or

"/home/MacbookPro"

- 2. Next, download the ELSTAR tool from the AIR ShareFile data platform :
  - a. Go to this webpage: <u>https://air.sharefile.com/f/foh0e631-7517-4435-98e6-83295b47857e</u>
  - b. Enter the following user name and password when the login screen appears on the right side under Guest Sign In (see Figure 33)
  - c. Username: <u>elptool2018@gmail.com</u>
  - d. **Password (case-sensitive):** elstarDownload\*2019\*

Figure 34. Tool download log-in page.

	AIR
AIR User Sign In	Guest Sign In
ShareRie is NOT authorized to store or process data with classification levels of CONFIDENTIAL or RESTRICTED including but next innext to propertary code, unputsined research, or	(test
Personally identifiable information (PR) other that directory information, Shatefile in for company business and restricted to a information scale. All information indirections of searching in	
Sign In	Sign In
	Remember Me     Forget Password?

3. Select the Install Documents (Mac only) folder.

#### Figure 35. Install tool documents.

Folders > mlee@air.org > ELP Accountability Tool				
ELP Accountability Tool 🔤 More Options				
T Items in this Folder & People on this Folder				
Name 🔺	Size	Uploaded	Creator	
□ ☆ 🛅 Install Documents (MAC only)	13 MB	3:07 PM	M. Lee	
🗆 🚖 elpShinyApp.zip	352 MB	3:07 PM	M. Lee	
		Email me v	/hen a file is: 🗌 Uploaded t	o this folder

4. Download each of the following documents by selecting each item and clicking "Download", highlighted in Figure 36.

Figure 36. Download tool files to directory.

Folders > mlee@air.org > ELP Accountability Tool > Install Documents (MAC only) Install Documents (MAC only) More Options				
□ Items in this Folder & People on this Folder				
🕹 Download 🕞 Copy \cdots More				
Name 🔺	Size	Uploaded	Creator	$\equiv$ :::
🜌 🛱 🛅 elpshiny	9 MB	3:07 PM	M. Lee	
✓ ☆ xs 1. Master.csv	787 KB	3:07 PM	M. Lee	
1 1 2. previousYear.csv	1 MB	3:07 PM	M. Lee	
✓ ☆ xs 3. currentYear.csv	1 MB	3:07 PM	M. Lee	
ELP App Initialization for Mac.docx	428 KB	3:07 PM	M. Lee	

Email me when a file is: 🗌 Uploaded to this folder

- 5. Move each of these files to the location of your working directory, as retrieved in Section 1 of this section.
- 6. Back in "RStudio", run the following code to navigate to the elpshiny folder we just placed in our working directory:

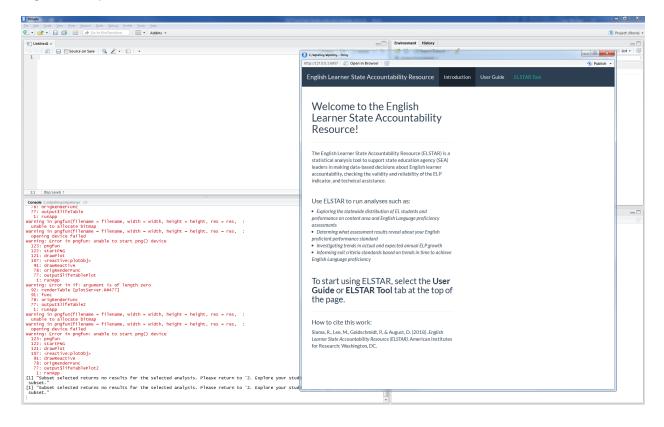
setwd("~/elpshiny")

7. Finally, run the following code to load the tool:

runApp()

8. The ELSTAR should now be hosted locally and can be opened in a browser window by clicking on the "Show in new window" symbol in the top left of the viewer pane:

Figure 37. Open the tool in a new window.



# **Appendix C. Screen Shots of ELSTAR**

## Landing Page Navagation Bar

#### Figure 38. Introduction.

English Learner State Accountability Resource			a 164	-	
English Learner State Accountability Resource	Introduction	User Guide	ELSTAR Tool		

## Welcome to the English Learner State Accountability Resource!

The English Learner State Accountability Resource (ELSTAR) is a statistical analysis tool to support state education agency (SEA) leaders in making data-based decisions about English learner accountability, checking the validity and reliability of the ELP indicator, and technical assistance.

#### Use ELSTAR to run analyses such as:

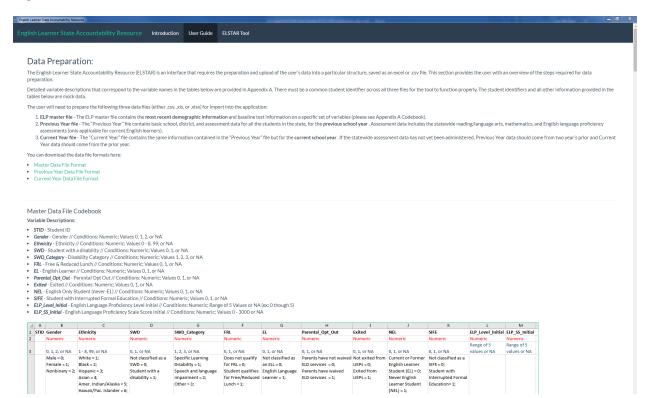
- Exploring the statewide distribution of EL students and performance on content area and English Language proficiency assessments
- Determing what assessment results reveal about your English proficient performance standard
- Investigating trends in actual and expected annual ELP growth
- Informing exit criteria standards based on trends in time to achieve English Language proficiency

# To start using ELSTAR, select the **User Guide** or **ELSTAR Tool** tab at the top of the page.

#### How to cite this work:

Slama, R., Lee, M., Goldschmidt, P., & August, D. (2018). English Learner State Accountability Resource (ELSTAR). American Institutes for Research: Washington, DC.

#### Figure 39. User Guide.



#### Figure 40. ELSTAR Tool.

English Learner State Accountability Resource		Provide 18 8 million
English Learner State Accountability Resource Introduction User Guide	ELSTAR Tool	
The English Learner State Accountability Resource (ELSTAR) is a tool that offers an inte If you are having trouble formatting the variables names correctly, download the data fil		explore English Language Proficieny assessment data.

- Master Data File Format
- Previous Year Data File Format
  Current Year Data File Format

After uploading your data, Step 2 features dropdowns and checkboxes to tune the parameters to select your subset of interest. Clicking 'Update Figures' then regenerates each figure using the selected subset. Once you've selected a subset, you can analyze your student subset further in Step 3.

$\equiv$ 1. Import your two data years $\equiv$				
NOTE: Data can be imported as a csv, xls, or xlsx file.				
1. Choose Master File				
Browse No file selected				
2. Choose File from Previous Year				
Browse No file selected				
3. Choose File from Current Year				
Browse No file selected				

## Sidebar Panel 1: Data Import

#### Figure 41. Panel 1, full view.

English Learner State Accountability Resource Introduction User Guide ELSTAR Tool The English Learner State Accountability Resource (ELSTAR) is a tool that offers an interactive interface to explore English Language Proficieny assessment data.

If you are having trouble formatting the variables names correctly, download the data file formats here:

Master Data File Format

English Learner State Accountability Resource

- Previous Year Data File Format Current Year Data File Format

After uploading your data, Step 2 features dropdowns and checkboxes to tune the parameters to select your subset of interest. Clicking 'Update Figures' then regenerates each figure using the selected subset. Once you've selected a subset, you can analyze your student subset further in Step 3.

$\equiv$ 1. Import your two data years $\equiv$				
NOTE: Data can be imported as a csv, xls, or xlsx file.				
1. Choose Master File				
Browse No file selected				
2. Choose File from Previous Year				
Browse No file selected				
3. Choose File from Current Year				
Browse No file selected				

Figure 42. Error messages.

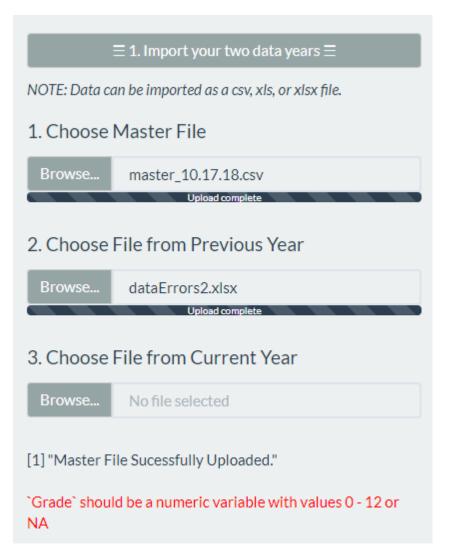
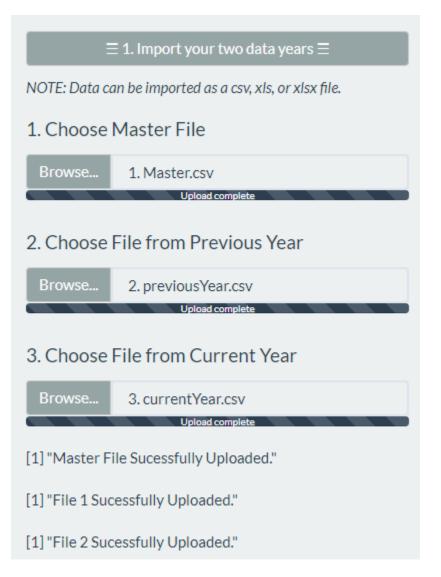


Figure 43. Successful import.



## Sidebar Panel 2: Data Exploration

### Figure 44. Panel 2, full view.

English Learner State Accourt	stability Resource			and the second	And I I I Married Married			the second second	_ D _ X
English Learner	State Accountability Resource	Introduction User (	Guide ELSTAR Tool						
	rner State Accountability Resource (ELS) g trouble formatting the variables names			olore English Language F	Proficieny assessment data.				
	a File Format ar Data File Format r Data File Format								
After uploading	your data, Step 2 features dropdowns an	d checkboxes to tune the	parameters to select your s	ubset of interest. Clickir	ig 'Update Figures' then regenera	tes each figure using the selected subset.			
Once you've sel	lected a subset, you can analyze your stud	ent subset further in Step	3.						
	$\equiv$ 1. Import your two data years $\equiv$		Update Fig	jures					
	$\equiv$ 2. Explore your student data $\equiv$	Current by Grade		ELP Performance by Domain	Content Area Performance Boxplot by Grade	Content Area Performance Boxplot by English Language Status	Student Subset		
A. School Variables	B. Contextual C. Student Variables Demographics								
D. Plot Tools	E. Variables of Interest								
Select Distri	ict(s):								
1001, 100	2, 1003, NA	•							
Select Schoo	sl(e).								
	320, 322, 323, 327, 325, 318, 319, 317, 3	14							
Year									
All Years		•							
Select Grade	a(c):								
	, 5, 6, 7, 8, 9, 10, 11, 12, NA	•							
	$\equiv$ 3. Analyze your student subset $\equiv$								
		Informat	ion Application:						
		The purpos whether th	e of this tab is to explore the ere is a general shift toward	s higher ELP levels as gr	ades increase. This can help mate	ficiency levels and grade in your state. Th h appropriate services by grade/age. Also	o, if there are significant difference	sin	
		distribution	across grades or grade spa	ns, the SEA may want to	examine whether this has any im	pact on the accountability results. The us	ser may also drill down to the distri	at and school	

#### Figure 45. Panel 2, sidebar tab A: School Variables.

$\equiv$ 2. Explore your student data $\equiv$						
A. School Variables	B. Contextual Variables	C. Student Demographics				
	E. Variables of Interest					
Select Distric	t(s):					
1001, 1002, 1003, NA 🔹						
Select School(s):						
321, 324, 32	20, 322, 323, 327, 3	25, 318, 319, 317, 314, 🕶				
Year						
All Years		•				
Select Grade(s):						
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, NA -						

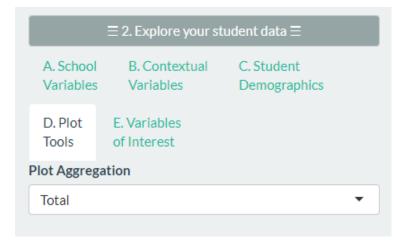
Ξ	E 2. Explore your st	udent data Ξ
A. School Variables	B. Contextual Variables	C. Student Demographics
D. Plot Tools		
EL Status		
All Students		•
Parental Opt (	Dut	
All Students		•
Select ELP Lev	vel:	
1, 2, 3, 4, 5, 6	, NA	-
Select Initial E	LP Level:	
1, 2, 3, 4, 5, 6	, NA	•
Select ELP Tes	t Occasions:	
1, 2, 3, 4, 5, 6	, 7, 8, 9, 10, 11, NA	-
Reclassifiation	n Status	
All Students		•
English Only S	tatus	
All Students		•
ELP Attainme	nt	
All Students		•
Student with I	nterrupted Forma	Education
All Students		•

Figure 46. Panel 2, sidebar tab B: Contextual Variables.

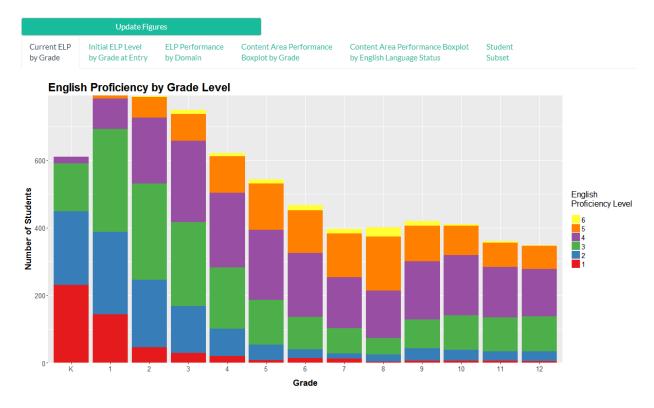
	∃ 2. Explore your st	udent data Ξ					
A. School Variables	B. Contextual Variables	C. Student Demographics					
D. Plot Tools	E. Variables of Interest						
Gender							
All Students			•				
Disability Stat	tus						
All Students	All Students						
Choose Specia	al Education Categ	ory					
Specific Lear	rning Disability, Spe	ech and language in	npa 🕶				
Free Lunch St	atus						
All Students			•				
Choose Ethnic	city						
White, Black	k, Hispanic, Asian, A	mer. Indian/Alaska,	Ha 🕶				

Figure 47. Panel 2, sidebar tab C: Student Demographics.

Figure 48. Panel 2, sidebar tab D: Plot Tools.

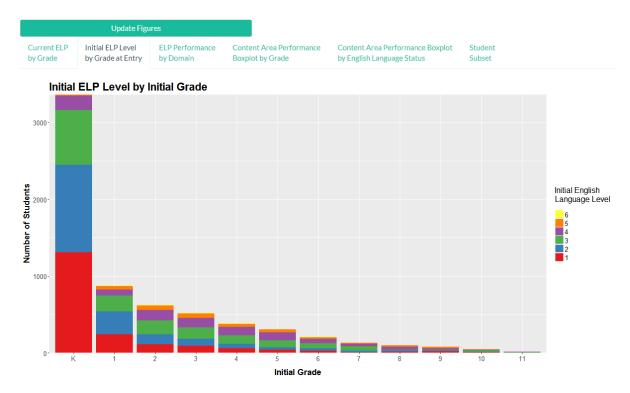


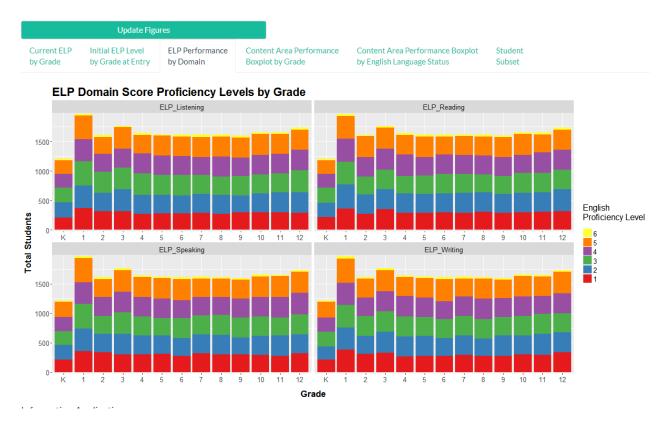
$\equiv$ 2. Explore your student data $\equiv$								
	B. Contextua Variables	I C. Student Demographics						
D. Plot Tools	E. Variables of Interest							
Unique.Statu	is.Code:							
1, 2, 3, 4, 5,	6, 7, 8	•						
X504.Plan:	X504.Plan:							
No, Yes, NA	Ą	•						
State.Transfe	State.Transferred.From:							
AK, AL, AR, AZ, CA, CO, CT, DE, FL, GA, HI, IA, ID, IL, IN 🗸								
Absences:								
0, 1, 2, 3, 4,	5, 6, 7, 8, 9, 10, 1	1, 12, 13, 14, 15, 16, 17, 18 🗸						



#### Figure 50. Panel 2, plot tab 1: Current ELP by Grade.

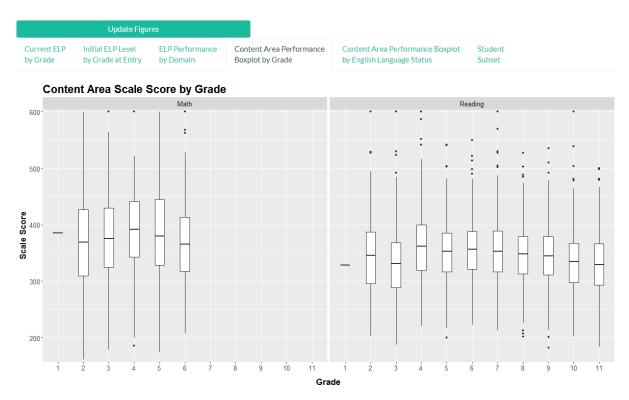
Figure 51. Panel 2, plot tab 2: Initial ELP Level by Grade at Entry.

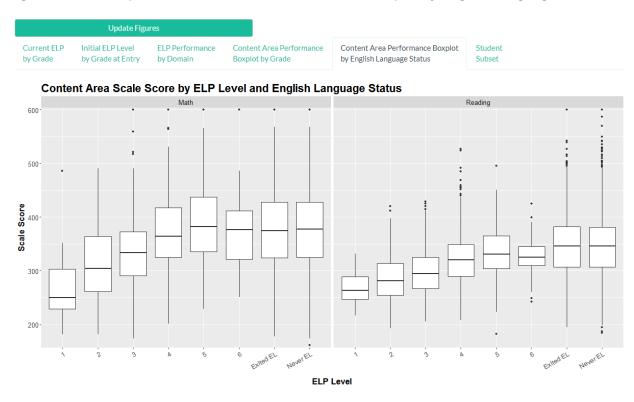




#### Figure 52. Panel 2, plot tab 3: ELP Performance by Domain.







#### Figure 54. Panel 2, plot tab 5: Content Area Performance Boxplot by English Language Status.

#### Figure 55. Panel 2, plot tab 6: Student Subset.

	Update Fig	gures										
Current ELP by Grade	Initial ELP Level by Grade at Entry	ELP Pe by Don	rformance nain	Content Are Boxplot by C		nce Content Are by English La		ance Boxplot tatus	Student Subset			
how 10 • entr	ies								Sea	rch:		
School_Code	District_Code	STID \$	Gender	Ethnicity	SWD \$	SWD_Category ♦	FRL	EL 🔶 🛛 Pare	ntal_Opt_Out	Exited 🔶	$\mathbf{NEL} \ \diamondsuit$	SIFE
321	1001	1	0	3	1	1	0	1	0	1	0	0
324	1002	2	1	3	0		1	0		0	1	0
324	1002	3	0	3	1	2	0	0		0	0	1
321	1001	4	0	3	1	1	1	1	0	1	0	1
324	1002	5	0	1	0		1	0		0	1	0
320	1003	6	0	3	0		1	1	0	1	0	0
324	1002	7	1	3	0		1	1	1	1	0	0
322	1001	8	1	2	1	1	1	0		0	1	0
320	1003	9	0	3	0		0	0		0	1	0
320	1003	10	1	1	0		1	0		1	0	0

## Sidebar Panel 3: Data Analysis

Figure 56. Panel 3, full view.

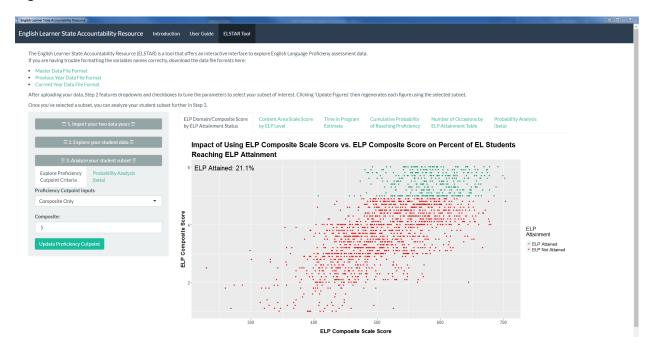


Figure 57. Panel 3, sidebar detail.

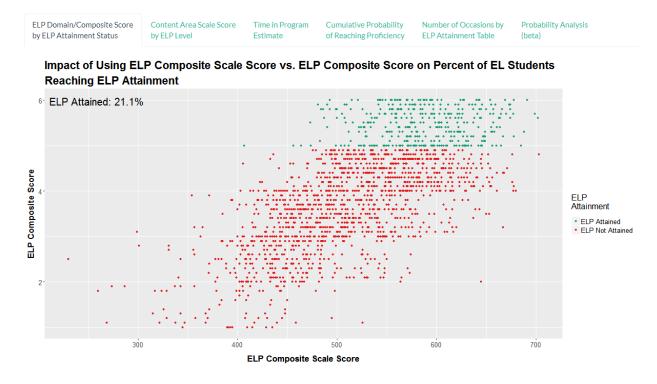
$\equiv$ 3. Analyze your student subset $\equiv$							
Explore Proficiency Cutpoint Criteria	Probability Analysis (beta)						
Proficiency Cutpoint Inputs							
Composite Only 🔹							
Composite:							
5							
Update Proficiency Cutpoint							

Figure 58. Panel 3, sidebar tab 1: Explore Proficiency Cutpoint Criteria.

$\equiv$ 3. Analyze your student subset $\equiv$								
Explore Proficiency Cutpoint Criteria	Probability Analysis (beta)							
Proficiency Cutpoint Inp	outs							
Composite and Domai	ns 🔻							
Composite:								
5								
Reading:								
5								
Writing:								
5								
Speaking:								
5								
Listening:								
5								
Update Proficiency Cu	tpoint							

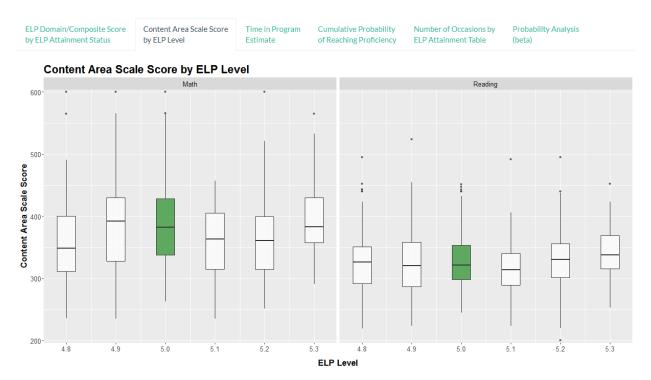


≡ 3. Analyze	e your student subset $\equiv$							
Explore Proficiency Cutpoint Criteria	Probability Analysis (beta)							
Regression Outcome								
ELP Attainment								
Exit								
Listening								
Speaking								
<ul> <li>Writing</li> </ul>	<ul> <li>Writing</li> </ul>							
Reading								
<b>Regression Inputs</b>								
Initial ELP Level								
Student with Interrup	ted Formal Education (SIFE)							
Students w/ Disability	r							
Free/Reduced Lunch								
Ethnicity								
Gender								
Account for non-linea	r growth							
Run Regression								



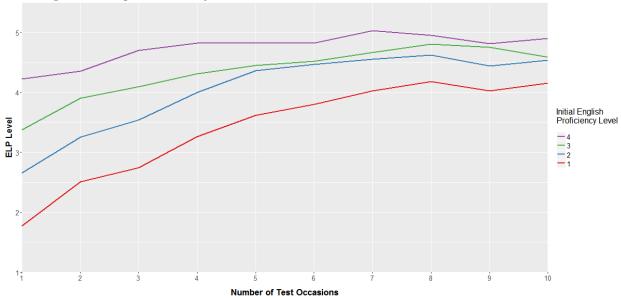




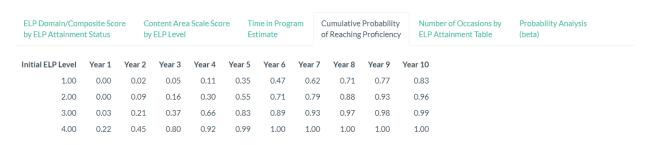


ELP Domain/0 by ELP Attain	Composite Score ment Status	e Conten by ELP I	t Area Scale Sco Level	ore Time in Estima	n Program te	Cumulative Pr of Reaching P		Number of Occ ELP Attainmen	· · · · · · · · · · · · · · · · · · ·	Probability Analy (beta)	ysis
Initial ELP Level	Test Occasion 1	Test Occasion 2	Test Occasion 3	Test Occasion 4	Test Occasion 5	Test Occasion 6	Test Occasion 7	Test Occasion 8	Test Occasion 9		Years to Level 5 ELP
1.00	0.77	0.74	0.24	0.51	0.36	0.19	0.22	0.16	-0.15	0.13	NA
2.00	0.66	0.60	0.29	0.46	0.36	0.11	0.08	0.07	-0.18	0.09	NA
3.00	0.37	0.53	0.19	0.22	0.14	0.07	0.15	0.14	-0.05	-0.17	NA
4.00	0.22	0.13	0.34	0.12	0.00	0.00	0.21	-0.08	-0.14	0.08	7.00

#### Figure 62. Panel 3, plot tab 3: Time in Program Estimate.



Average ELP Change Over Time by Initial ELP Level





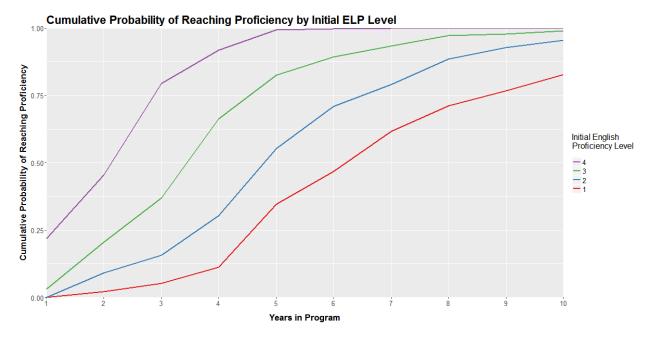


Figure 64. Panel 3, plot tab 5: Number of Occasions by ELP Attainment Table.

ELP Domain/Com by ELP Attainmer		Content Area Scale Score by ELP Level	Time in Program Estimate	Cumulative Probability of Reaching Proficiency	Number of Occasions by ELP Attainment Table	Probability Analysis (beta)
Initial ELP Level	Mean Test Oc	ccasions - ELP Not Attained (to	tal) Mean Test Oc	casions - ELP Attained (total)		
1.00	4.3 (1555)		3.94 (192)			
2.00	4.37 (1346)		4.14 (311)			
3.00	4.56 (1140)		4.06 (315)			
4.00	4.95 (546)		3.89 (232)			
5.00	NA (110)		NA (257)			
6.00	2.6 (5)		NA (19)			

### Figure 65. Panel 3, plot tab 6: Probability Analysis (beta).

ELP Domain/Composite Score by ELP Attainment Status	Content Area Scale Score by ELP Level	Time in Program Estimate	Cumulative Probability of Reaching Proficiency	Number of Occasions by ELP Attainment Table	Probability Analysis (beta)	
Generalized linear mixed mode Approximation) [glmerMod] Family: binomial ( logit ) Formula: ELP_Attained ~ ELP_L (1   School Code)	-					
Data: elpImport						
AIC BIC logLik de 5718.1 5778.4 -2850.1	viance df.resid 5700.1 5988					
Scaled residuals: Min 1Q Median -2.1455 -0.5253 -0.4184 -0.31	3Q Max 37 3.3746					
Random effects: Groups Name Vari School_Code (Intercept) 9.89 Number of obs: 5997, groups:						
	itd. Error z value Pr(> z ]					
(Intercept) -1.86344 ELP_Level_Initial2 0.63294 ELP Level Initial3 0.82070	0.09947 6.363 1.98e-10	3 ***				
ELP_Level_Initial4 1.26447 ELP_Level_Initial5 2.90904	0.11075 11.417 < 2e-10 0.14170 20.530 < 2e-10	5 ***				
ELP_Level_Initial6 3.44714 SWD1 0.02910 ELP_Test_Occasions -0.05691	0.51325 6.716 1.86e-1: 0.11577 0.251 0.80 0.01178 -4.830 1.36e-00	2				
 Signif. codes: 0 '***' 0.001	. '**' 0.01 '*' 0.05 '.' 0	.1 ' ' 1				
	LP_L_I3 ELP_L_I4 ELP_L_I5	ELP_L_I6 SWD1				
ELP_Lvl_In2 -0.655 ELP_Lvl_In3 -0.648 0.596 ELP_Lvl In4 -0.577 0.542	0.543					
ELP_Lvl_In5 -0.430 0.426 ELP_Lvl_In6 -0.115 0.118	0.428 0.393 0.119 0.110 0.088 0.113 0.124 0.117	0.039				
		-0.036 -0.024				