

Result Presentation with Stata

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Outline

- The importance of result presentation
- Stata commands for creating tables
 - Basic logics
 - Steps of creating tables with Stata
- Stata commands for creating graphs
 - Basic logics
 - Steps of creating graphs with Stata
- Advantages and disadvantages of using Stata to create tables and/or graphs
- Stata examples
- Additional resources
- Conclusions

The Importance of Result Presentation

- Analysis results are generally presented in tables or graphs to help readers better understand the relations among variables
- A table refers to a structured arrangement of data in rows and columns. Tables provide comprehensive data summaries, including means, frequencies, or percentages, for each variable or a combination of variables. Tables are suitable when researchers want to focus on specific values, categories, or subgroups of the results.
- A graph refers to a visual representation of data or information. Graphs provide visual patterns and trends of the relations among variables, allowing the audience to intuitively grasp the overall picture without the need for detailed numerical analyses.
- Stata has suits of commands to create/customize tables and graphs, respectively
 - The `-table-` , `-etable-`, `-dtable-`, and `-collect get-`, and `-collect-` commands are used to obtain analysis results and customize tables
 - The `-graph-` command is used to create/customize graphs

Stata Commands for Creating Tables

- A table refers to a structured arrangement of data in rows and columns. Tables are commonly used to present and summarize data in a systematic and organized manner, making it easier to understand patterns, relationships, and distributions in the data.
- Sample tables that Stata can create:

	Sex		
	Male	Female	Total
Age (years)			
Mean	47.42	47.72	47.58
Standard deviation	17.17	17.26	17.21
Body mass index (BMI)			
Mean	25.51	25.56	25.54
Standard deviation	4.02	5.60	4.91
Systolic blood pressure			
Mean	132.89	129.07	130.88
Standard deviation	20.99	25.13	23.33

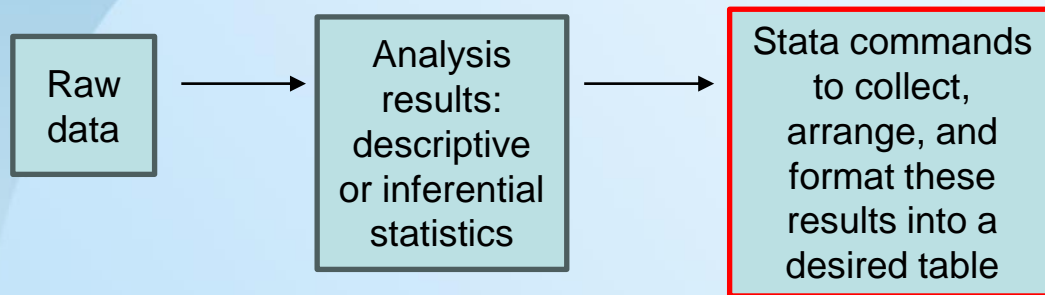
	Not diabetic	Diabetic	p-value
Age (years)	48	64	<0.001
Weight (kg)	70.19	74.84	<0.001
Systolic blood pressure	128	142	<0.001
Serum cholesterol (mg/dL)	212	223	<0.001
Serum iron (mcg/dL)	96	88	<0.001

	Males		Females		Difference p-value
	N	Mean BP	N	Mean BP	
White	4312	132.85	4753	128.53	0.00
Black	500	133.69	586	133.85	0.92
Other	103	130.67	97	126.72	0.31

	(1)	(2)
Weight (kg)		
Coefficient	.4340474	.4335342
Std. error	.0153533	.0153559
Not diabetic		
Coefficient	0	0
Std. error	0	0
Diabetic		
Coefficient	14.34115	12.57211
Std. error	1.019611	1.538361
Male		
Coefficient	0	0
Std. error	0	0
Female		
Coefficient	1.107633	.9520999
Std. error	.4710559	.4817911
Not diabetic # Male		
Coefficient		0
Std. error		0
Not diabetic # Female		
Coefficient		0
Std. error		0
Diabetic # Male		
Coefficient		0
Std. error		0
Diabetic # Female		
Coefficient		3.146466
Std. error		2.048958
Intercept		
Coefficient	98.40567	98.5238
Std. error	1.235476	1.237787

Stata Commands for Creating Tables (Cont.)

- Basic logic of creating/customizing tables



- When creating tables, we work with analysis results, not raw data
- Subsequently, Stata has new terms such as collection, tag, dimensions, level, and result to refers to different components of the tables
- The modification to these components does not change raw data

Steps of Creating Tables

Table 1. Steps of Customizing Tables in Stata	
Steps and key Stata commands	Functions of the Stata commands
1. Prepare to collect results	
-collect create-	Create a new collection
-collect clear-	Clear all collections in memory
2. Collect results	
-collect prefix	Collect results from the prefixed command
-collect get	Collect results from a previously run command
3. Combine collections	
collect combine	Collect results from existing collections
4. Explore the collection	
collect dims	List dimensions in a collection
collect levelsof	List levels of a dimension
collect label	list List the levels of a dimension along with their labels
5. Modify the collection	
collect add tags	Add tags to items in a collection
collect recode	Recode dimension levels in a collection
collect remap	Remap tags in a collection (modifying tags within or across dimensions)
collect composite	Manage composite results in a collection

Steps of Creating Tables (Cont.)

6. Lay out rows and columns of the table	
collect layout	Arrange values in the collection into a table
collect style	autolevels Specify statistics to be automatically added to the table
7. Preview the table	
collect preview	Preview the table in a collection
8. Modify labels in row and column headers	
collect label dim	Add or modify the label for a dimension
collect label levels	Add or modify labels for levels within a dimension
collect label use	Apply labels from an external label file
collect label drop	drop Drop dimension and level labels
collect style header	Specify whether titles, labels, or nothing is shown for a dimension or for levels of a dimension
collect style row	Change arrangement of row headers, how factor variables are displayed, how duplicates are reported, and how long labels wrap
collect style column	Change arrangement of column headers, how factor variables are displayed, how duplicates are reported, and the width and spacing of columns
collect style table	Change display of factor variables in table headers

Steps of Creating Tables (Cont.)

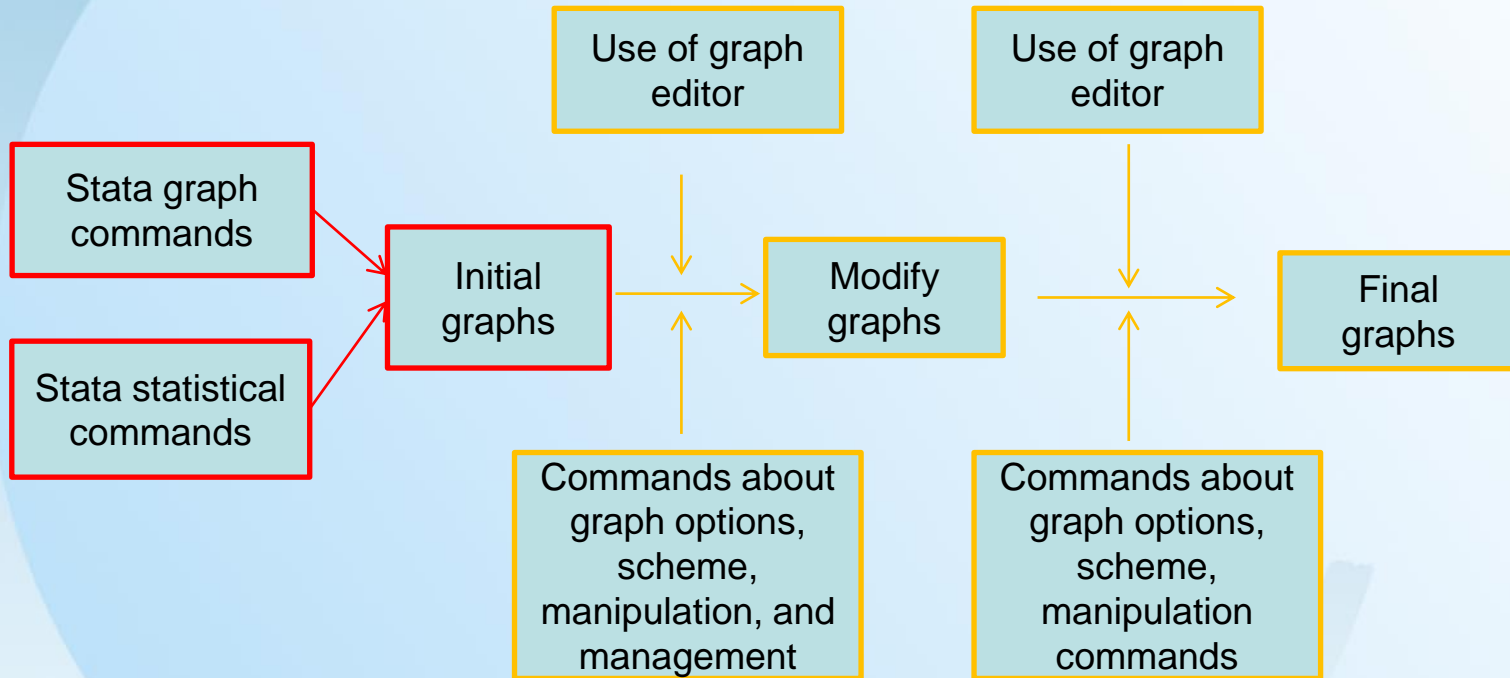
Table 1. Steps of Customizing Tables in Stata (continued)	
9. Query collection style properties	
collect query	Query collection style properties
10. Export the table	
collect export	Export table from a collection
putdocx collect	Add a table to a report created by putdocx
putpdf collect	Add a table to a report created by putpdf
putexcel ul cell = collect	Add a table to a report created by putexcel with the top left cell of the table in ul cell
11. Save styles and labels	
collect label save	Save labels to a file
collect style save	Save styles to a file
12. Save the collection	
collect save	Save a collection to disk
collect use	Use a collection from disk
13. Manage collections	
collect dir	Display names of all collections in memory
collect set	Set the current (active) collection
collect copy	Copy a collection
collect rename	Rename a collection
collect drop	Drop collections from memory

Source: Stata Customizable Tables and Collected Results Reference Manual Release 18

Stata Commands for Creating Graphs

- Graphs are pictorial representations or diagrams that display data or values in an organized manner
- In a manuscript, graphs are used when it is difficult to use texts to concisely describe the relations between variables either because there are too many values in one variable or because more than two variables are examined.
- Different types of graphs highlight different features of the relations between variables. Thus, it is critical that researchers choose graphs that can best represent the relations between variables.
- Graphs need to contain a data field, a caption, axes, scales, and symbols. Sometimes, graphs may also have additional data fields, a title, a subtitle, and a note.

Steps of Creating Graphs



Steps of Creating Graphs (Cont.)

- Researchers need to decide what message they want to deliver using graphs. Thus, everytime graphs are modified, they are getting closer to accurately delivering the message.
- The initial graphs can be generated via two methods:
 - Stata graph commands can generate bar charts, scatter plots, and many other different charts and plots
 - Some Stata statistical commands also generate graphs, for example, the -life table- or -marginplot- commands
- The initial graphs can be modified via two methods:
 - Graph editor allows researchers to modify graphs interactively
 - Commands lines can be added to the original Stata comands to modify initial graphs

Advantages and Disadvantages Using Stata to Create Tables and Graphs

- Advantages:
 - Flexibility: Stata commands are highly flexible in creating tables and graphs. Stata users can customize various aspects of the table and graph to meet their specific needs.
 - Reproduction: Stata commands for generating tables and graphs can be saved for later use and reused. Users can reuse the saved command files to reproduce the same table and graph or apply them to different datasets without having to start from scratch.
 - High-quality output: Stata customized tables and graph command generates high-quality output suitable for publication or presentation purposes.
- Disadvantage
 - Steeper learning curve: Stata -tables- and -collect- command requires familiarity with its syntax and options. It may have a steeper learning curve, especially for users with limited experience with command-line interfaces.
 - Possible limitations on some advanced statistical techniques: With some advanced techniques (i.e., factor analyses, path analyses, hierarchical linear model), it may be easier to use software other than Stata to generate tables and graphs.

Stata Examples

The Stata command file has three aims:

- Demonstrate how to use `-table-`, `-dtable-`, and `-etable-` to quickly generate different tables
- Demonstrate how to use `-table-` and `-collect-` commands to generate and customize tables
- Shows how to use `-graph-` commands to generate bar charts, scatter plots, and combine graphs

Additional Resources

StataCorp LLC. (2021) Video clips on customizable tables

https://www.youtube.com/watch?v=4eg0hCAI304&list=PLN5IskQdgXWnmznilnIC-bS1pvKdazq_c

Chuck Huber (2021) Parts 1-7 of customizable tables in Stata 17

<https://blog.stata.com/category/reporting/>

Kristin MacDonald (2021) Customizable tables with Stata

https://www.stata.com/meeting/us21/slides/US21_MacDonald.pdf

German Rodriguez (2023) Stata tutorial

<https://grodri.github.io/stata/index>

Stata customizable tables and collected results reference manual release 18

<https://www.stata.com/manuals/tables.pdf>

Additional Resources (Cont.)

Video tutorials

<https://www.stata.com/features/publication-quality-graphics/>

Visual overview for creating graphs

<https://www.stata.com/support/faqs/graphics/gph/stata-graphs/>

Stata cheat sheet

<https://www.stata.com/bookstore/stata-cheat-sheets/>

Stata graphics reference manual release 17

<https://www.stata.com/bookstore/graphics-reference-manual/>

Michael N. M. (2012). A visual guide to Stata graphics, 3rd edition. College Station, TX : Stata Press

Conclusions

- Tables and graphs are important tools to show the relations among variables
- Stata has respective commands to generate and customize tables and graphs. These commands include two steps: (1) obtains the information needed for tables or graphs and (2) create and customize tables and graphs
- With Stata commands for tables and graphs, it becomes easier for researchers to reproduce tables and graphs and use these commands on analyses of different datasets
- Different tables and graphs draw attention to different aspects of relations between variables. Thus, it is important to browse through different tables and graphs and then choose one that best represents ideas manifested by the relations between variables.
- Stata has many commands to customize different components of tables and graphs. However, not all of them will be used when creating a table. It may be more fruitful for researchers to first learn commands generate the tables and graphs they use most frequently. If they need to generate new types of tables and graphs, they can then learn Stata commands to generate them.
- For further question, feel free to contact me at wuh@bgsu.edu or stop by my office (5D Williams Hall).