



# Better Graphics in Stata

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Making useful and publication-quality graphs (not necessarily the same thing)

1. Improve standard graphs
  - a) Customize them for aesthetic reasons
  - b) Make them better reveal patterns, discrepancies, relationships, etc. (Gelman)
2. Make new, better graphs for the same reasons

## **BETTER GRAPHICS IN STATA**



- No one can remember all of Stata's commands
  - I still look up commands all the time
- The Stata help pages are great – use them!
- The do file can be a reference for many commands
  - At minimum, we'll give you enough background to figure out what to google when you need to know a command

## A WORD OF WARNING



## Two from Andrew Gelman:

1. Don't clutter up the graph!
2. Small multiples per page; don't shoehorn

## My Own Rule:

What is your precise goal? *What are you trying to show is true?* **Before** making a graph, think about what visual would best convince you as a reader

# THREE RULES TO LIVE BY



Table V. Estimates of treatment effects from DID, QDID and

Outcome (1)	DID <sup>a</sup> (2)	QDID <sup>a</sup>				
		Q10 <sup>b</sup> (3)	Q25 <sup>b</sup> (4)	Q50 <sup>b</sup> (5)	Q75 <sup>b</sup> (6)	Q90 <sup>b</sup> (7)
Total cost (\$)	−412	−2	−17	−122**	−597**	−161
SE <sup>d</sup> (\$)	(353)	(26)	(37)	(85)	(230)	(597)
Medical cost (\$)	−469	−11	−36	−138*	−396*	−767
SE <sup>d</sup> (\$)	(303)	(21)	(31)	(60)	(175)	(554)
Rx cost (\$)	57	0	2	−0.7	15	−13
SE <sup>d</sup> (\$)	(130)	≈ (0)	(2)	(8)	(19)	(94)
Rx count	0.06	0.00	0.33	0.10	−0.11	−0.15
SE <sup>d</sup>	(0.24)	≈ (0)	(0.20)	(0.18)	(0.33)	(0.46)
Outpatient count	−0.60**	−1.00	0.00	−1.00*	−1.50	−1.33*
SE <sup>d</sup>	(0.17)	(0.55)	≈ (0)	(0.31)	(0.55)	(0.68)
Inpatient count	0.20*	0.00	0.00	0.00	0.50*	1.00***
SE <sup>d</sup>	(0.09)	≈ (0)	≈ (0)	≈ (0)	(0.28)	(0.23)
ER visit count	0.04	0.00	0.00	0.00	0.00	1.00*
SE <sup>d</sup>	(0.05)	≈ (0)	≈ (0)	≈ (0)	≈ (0)	(0.45)

DID: difference in differences estimate; QDID: quantile difference in differences estimate;

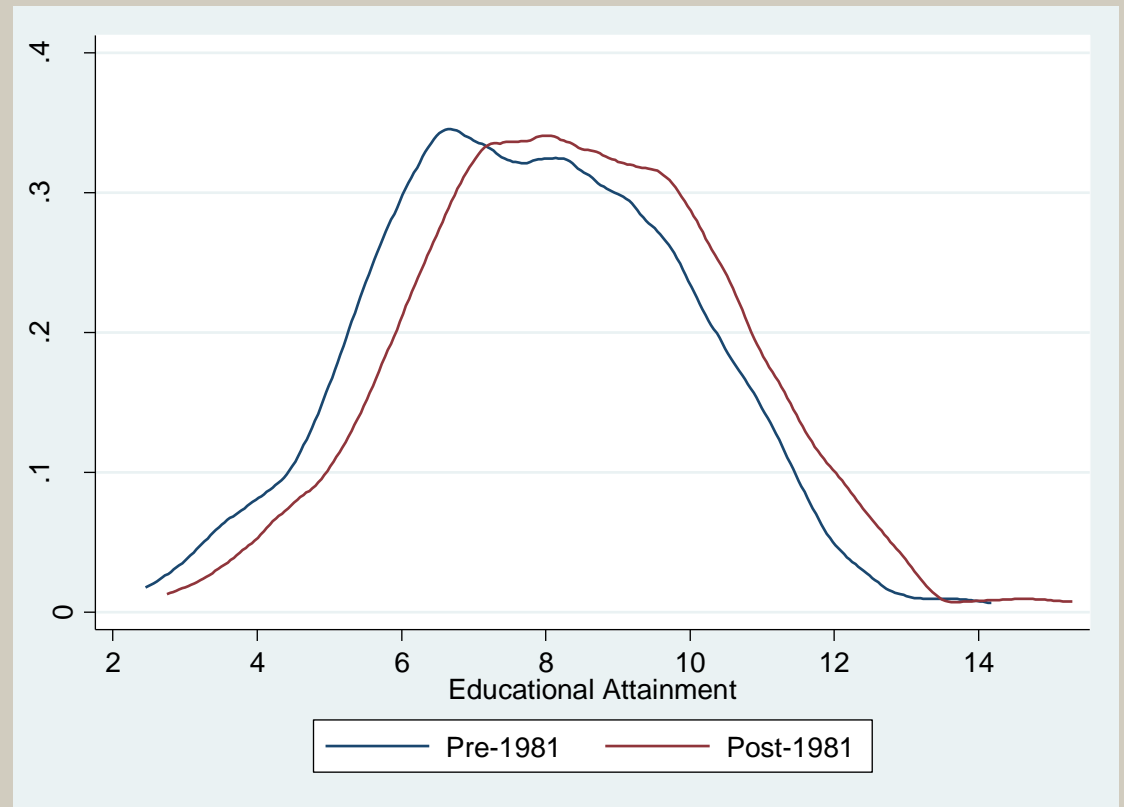
What's wrong  
with this table?

# QUANTILE REGRESSION RESULTS

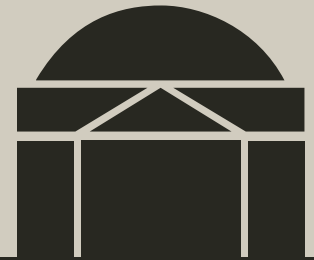


Source: Borah, Bijan J., Marguerite E. Burns and Nilay D. Shah. 2011. Assessing the impact of high deductible health plans on health-care utilization and cost: a changes-in-changes approach. *Health Economics* 20 (9): 1025-1042.

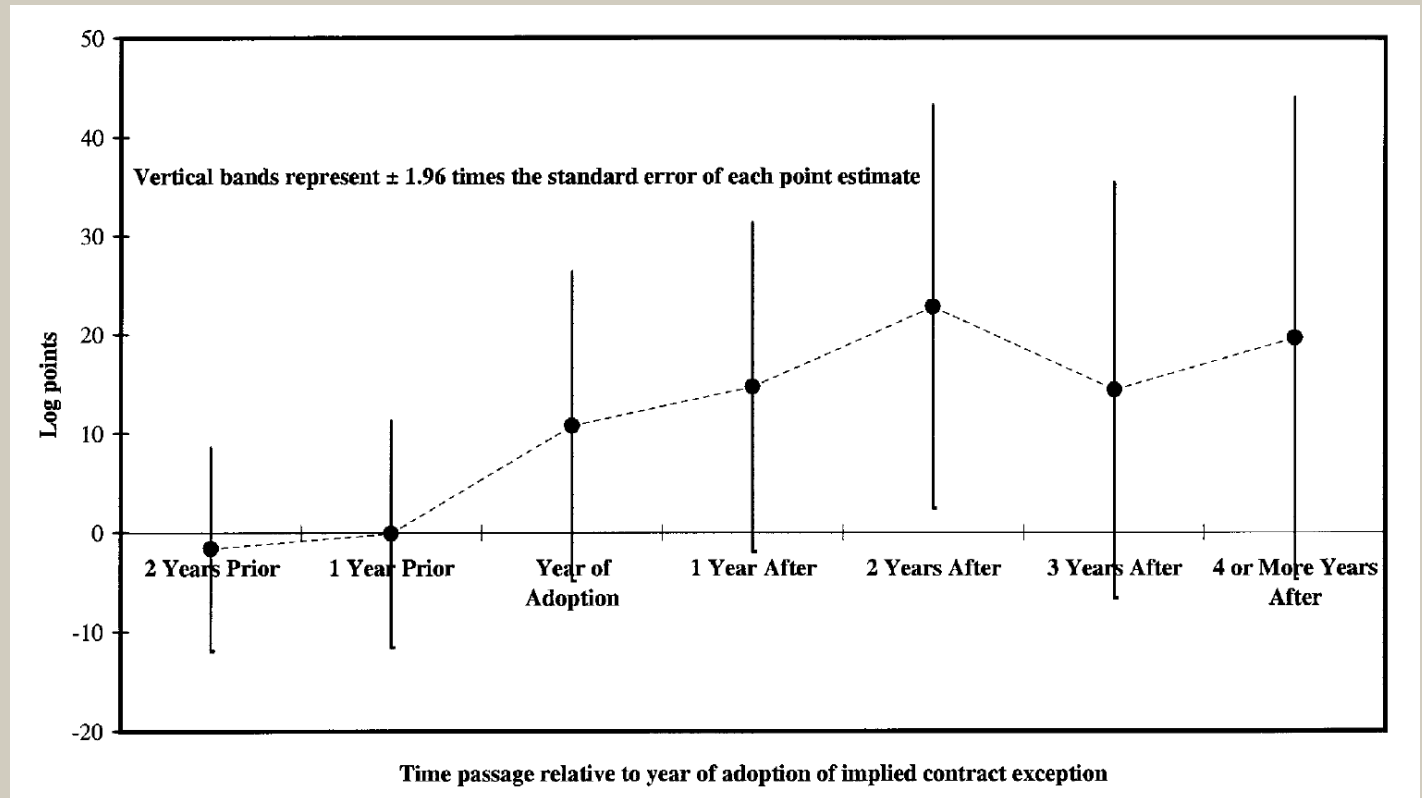
- Communicates the same information
- Easier to see that effects are the same across quantiles
- Could be improved
  - Confidence intervals
  - Plots for other variables



## A BETTER APPROACH



- Highlights the results AND the research design
- Clean & easy to interpret

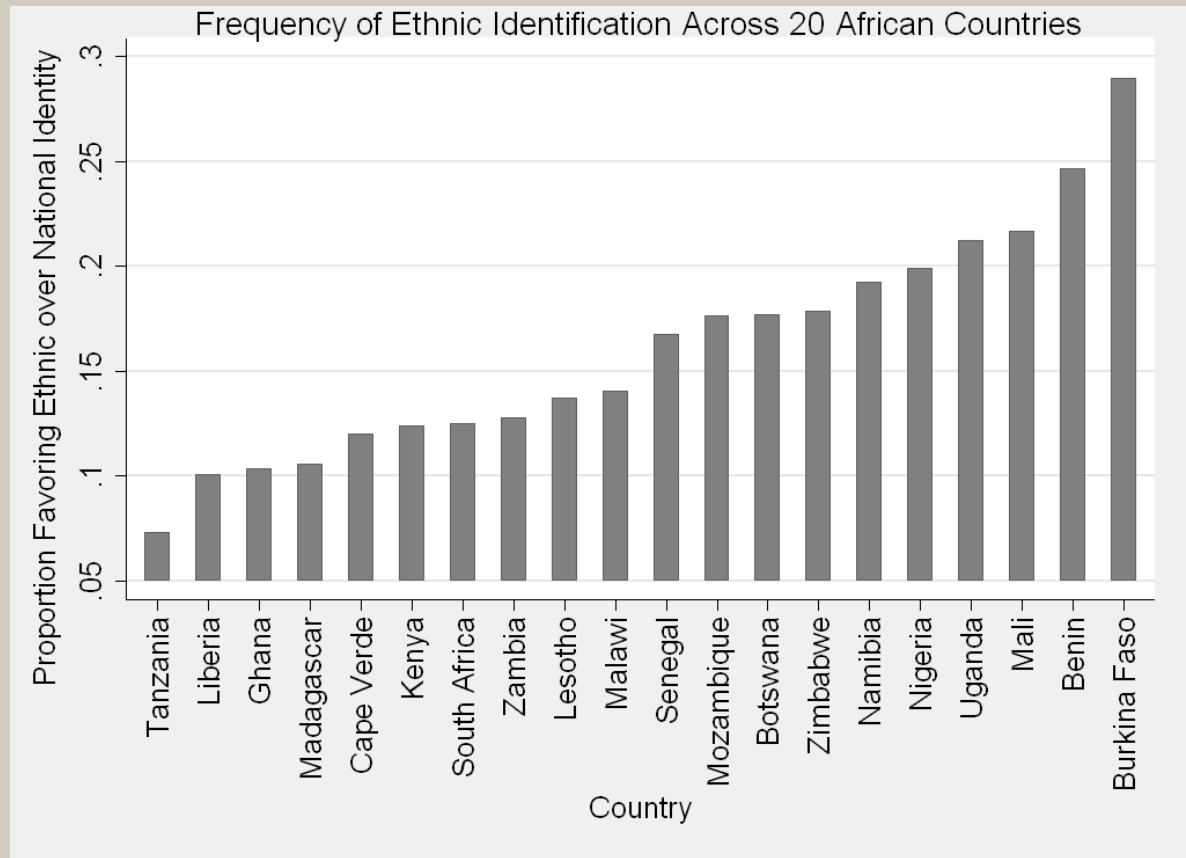


# CLEAR CONCLUSIONS FROM A GRAPH

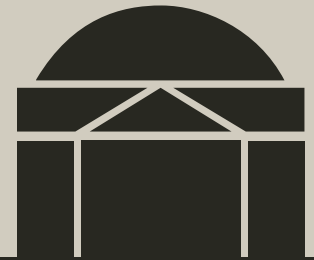


Source: Autor, David H. 2003. Outsourcing at will: The contribution of unjust dismissal doctrine to the growth of employment outsourcing. *Journal of Labor Economics* 21 (1): 1-42.

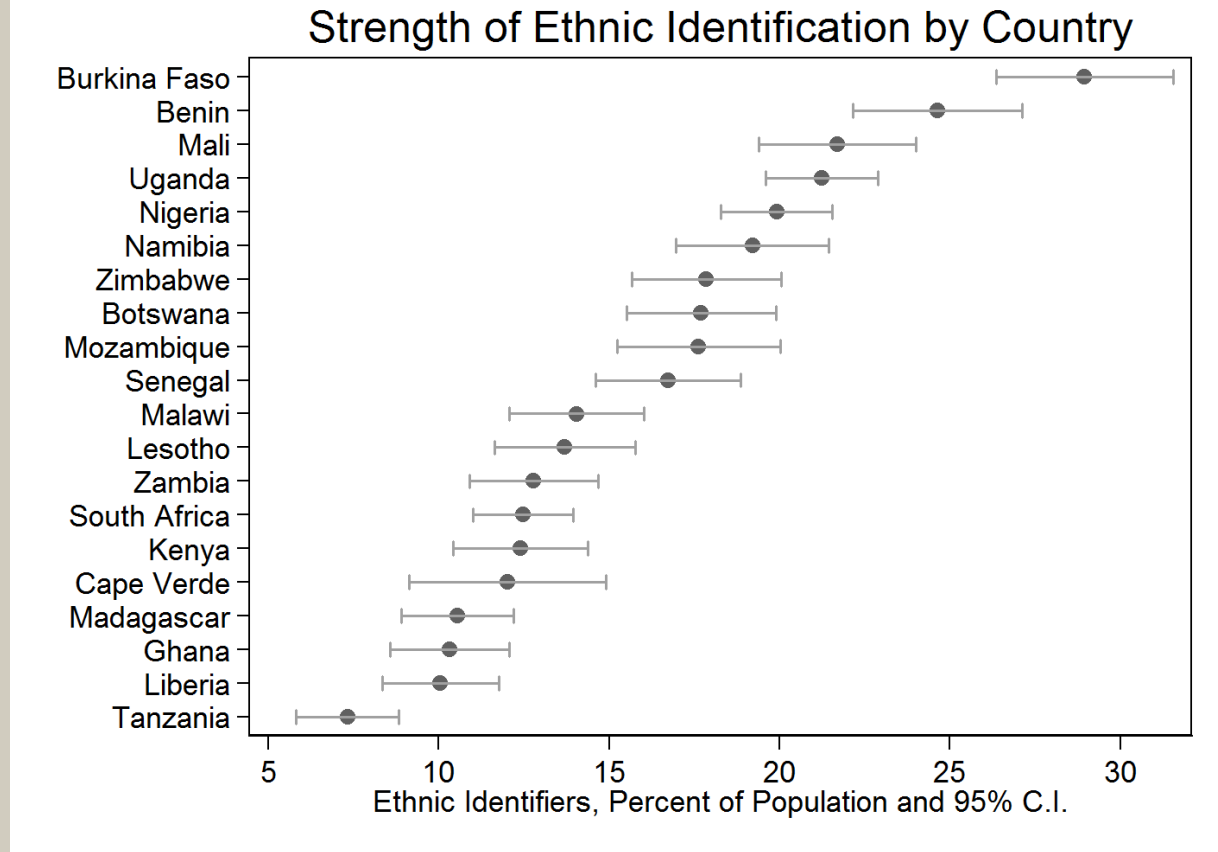
- Hard to read
  - Reorient horizontally
  - Error bars?
  - Dotplot instead
- Accomplishes the purpose of showing cross-country variation
- IS that it's purpose?



# A SEMI-INFORMATIVE BAR GRAPH



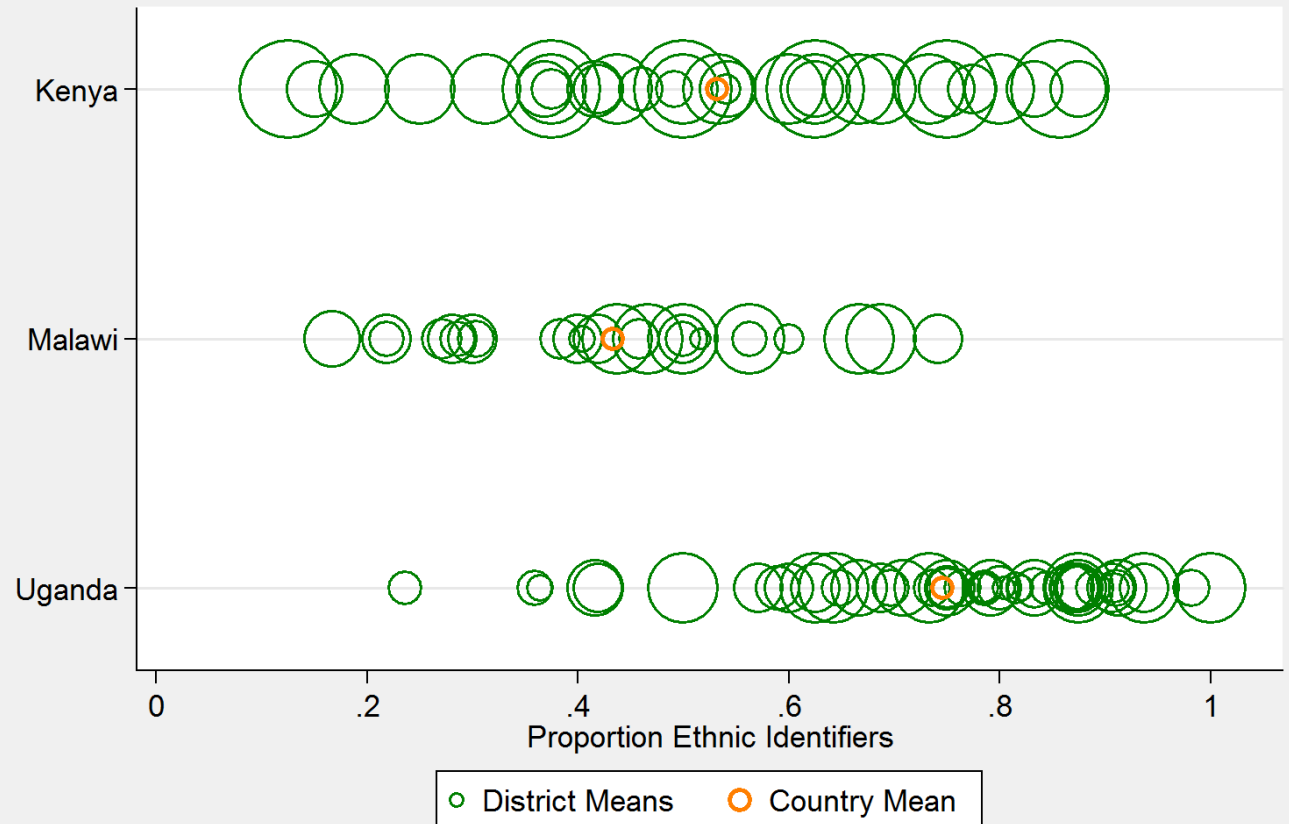
- Easier to read
  - Oriented horizontally
  - Less wasted ink
- Incorporates uncertainty
- What is this graph's purpose?



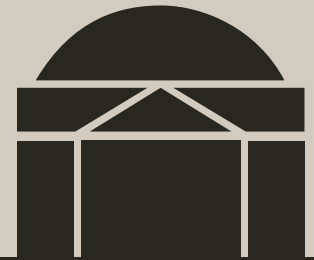
# A BETTER VERSION



- Hard to read;  
kind of ugly
- Illustrates a  
relevant fact  
about the data
- What is this  
graph's  
purpose?



# A DIFFERENT KIND OF GRAPH FOR A DIFFERENT PURPOSE



Enough talking – let's plot some things

## THE DO FILE



## Most Useful:

Michael Mitchell. *A Visual Guide to Stata Graphics, 3e or 2e*. 2012/2008.

## Other Resources:

Stata Help Pages

- Call them from Stata: -help graph bar-

- OR, they are all listed together at:

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

UCLA Stata Graph Examples

<http://www.ats.ucla.edu/stat/stata/library/GraphExamples/>

Enclosed Do Files

Primary do file for today's graphs + Supplementary do file for a few other graphs

# USEFUL REFERENCES – STATA GRAPHING



Kastellec and Leoni. 2007. Using Graphs Instead of Tables in Political Science. *Perspectives on Politics* 4: 755-771.

Gelman. 2013. Choices in Statistical Graphics: My Stories. Presented at *New York Data Visualization Meetup*. (Primarily the first 15 slides).

[http://www.stat.columbia.edu/~gelman/presentations/vistalk\\_meetup\\_new\\_handout.pdf](http://www.stat.columbia.edu/~gelman/presentations/vistalk_meetup_new_handout.pdf)

**For the ambitious:**

Kosslyn. 2006. *Graph Design for the Mind and Eye*. Oxford University Press. (A lot can be gleaned just by looking at his examples)

# USEFUL REFERENCES – GRAPHICAL PRESENTATION



THANK YOU!  
FOR YOUR ATTENDANCE

