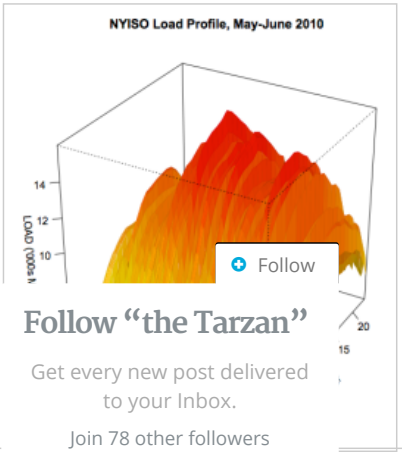
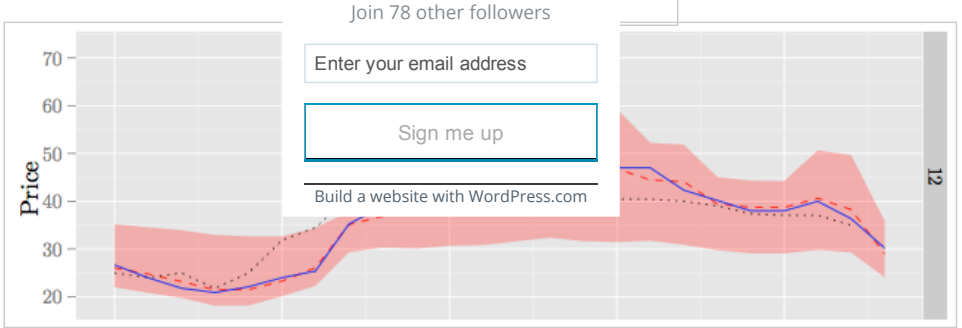
Why use R? A grad student's 2 cents

One of the problems I faced this past year was deciding which software package to use — for statistical analyses, homework problems, and my thesis research. A handful of professors here use SAS, many use Stata, a few use Matlab, and one uses R (that I know of). After a semester using SAS, and despite having only one professor on the R "team" — I decided to learn R.

Here's why:

- **R is free.** While I could get student discounts on SAS or Stata, or use the school computer lab, I like my software to be *there for me always*. If I want to run a regression at 2:00 am using the wi-fi of a Holiday Inn Express, I should be able to run that awesome regression. I can install R on every computer that I need (home, office, laptop, friends, enemies, etc.). This is helpful because the I like to work in a variety of places, and having all my tools on my person is required. **If I had to boil this list down to the one reason I'm using R right now, it's because of price. You can't. beat. free.*
- **R has really good online documentation; and the community is unparalleled.** One of the primary motivations for this blog is to give back to the R community that has helped me learn and appreciate the software. I want to mitigate the fixed-costs of learning R, help others in their quest to tackle data-driven analyses, and spread the good word. The more people who use R, the more people with which I can potentially collaborate.
- **I like the command-line interface.** You can use the command-line interface in other programs like SAS and Stata. But, when you are starting out — is that *really* what you use? It wasn't for me. Why? Because I didn't know any better — I was just starting out! The command-line interface is perfect for learning by doing. You can *immediately* see the results from inputting a single line of code. If there are errors, you can fiddle with your code and re-hit [enter]. This is the way I learn things, and surely I'm not alone.
- **R is on the cutting edge, and expanding rapidly.** If you follow any of the online communities that work with R, you will notice all the new packages being rolled out — almost daily! R is on the forefront of statistical methods, and can be integrated from any number of other languages – be it Python, Java, Fortran, etc.
- **The R programming language is intuitive.** One of the aspects I liked about R when I first started out is that it just worked. I wrote a function that followed my thought process, and bam! – it worked. Immediately it was improving my productivity, without having to know too much about coding or dig through a manual.
- **R creates stunning visuals.** See below; some of my favorites. And I'm still a beginner. Using Hadley Wickham's `ggplot2` and the stock imaging platform, it is straightforward to generate sharp diagrams.





- **R and LaTeX work together — seamlessly.** If you use LaTeX, you are in luck. I am writing my thesis in LaTeX, and just recently stumbled upon R's tikzDevice package. This package outputs images as TikZ code for direct compilation in .tex. For outputting multiple images, using loops, and reducing the file size of my thesis, this has been a huge plus.
- **R is used by practitioners in a plethora of academic disciplines.** R users come from myriad industries and academic departments, be it sociology, immunology, economics, statistics, paleontology, anthropology, finance, marketing analytics, etc. This cross pollination is healthy for the enterprising student. By seeing familiar concepts used in other disciplines, and through a different lens, it helps solidify your own understanding. Furthermore, this expanded user base increases the likelihood that

something useful to you will be added to the next CRAN package or version of R.

- **R makes you think.** Some statistical packages make it easy to perform many useful tasks via canned functions. For economists, Stata is one of those such programs. However, being forced to code a procedure by hand, though more time consuming, helps make it "stick". And the more you get acquainted with R's many packages, the more you will stumble upon a canned function that will do exactly what you want. But even if that availability exists, R makes is relatively straightforward to code your own procedure, and then check to make sure the two routes return the same results.
- **There's always more than one way to accomplish something.** Similar to the preceding point, I find it extremely helpful to tackle a problem two ways (or more), and make sure my results match. When I find that they don't, I am forced to really learn what's going on "under the hood" — and in consequence, expand my knowledge of R and econometrics.

So, do a bit of research and make an informed decision about what software you invest the time and energy to learn. If you do, I'm confident you'll see the potential in R and give it a shot.

Did I forget anything? — Why do you use R to dominate your data analysis?

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16 Responses to "Why use R? A grad student's 2 cents"

Tony
July 16, 2011 at 8:07 am

From a graduate of the master's program in economics at MSU, cheers! This is a nice list of reasons for economists to use R. As an added tip, I find that syntax highlighting in RStudio is fantastic for finding errors.

Reply

Kevin Goulding
July 16, 2011 at 8:57 am

Thanks Tony — good to hear and I am enjoying your econometrics blog! Very true; syntax highlighting is essential to avoid insanity in the form of small code typos.

Reply

Matt Bogard
July 16, 2011 at 2:50 pm

Great post! I concur, and have won a few converts myself in my local economics department (at least when it comes to visualization, copulas, and contour plots).

Reply

Kevin Goulding
July 17, 2011 at 12:23 pm

Matt – Thank you and good luck with spreading the woRd-

Reply

David
July 16, 2011 at 8:19 pm

Intuitive? No, not hardly. What you say in your explication of this egregious misuse of the often abused word

"intuitive" is just fine. However, while some programming languages may be easy to use, calling them intuitive just doesn't make sense at all.

Reply

nico
July 23, 2011 at 12:49 am

I love R, I use it as much as possible, but I have to agree with David, it has lots of quirks that don't help in making it intuitive.

For instance I don't think anyone would say the apply family of functions is intuitive. They're extremely powerful and useful, just not intuitive.
Or the behaviour of curly braces in if/else statements
Or the wonders of variable scoping (you can use a variable defined in a function body as a default value for one of the function's parameters, see http://blog.moertel.com/articles/2006/01/20/wondrous-oddities-rs-function-call-semantics Split horizont scoping section)

Reply

agentmodeling
August 1, 2011 at 9:12 pm

Ah, I was going to mention the wonderful http://rstudio.org/ if someone else hadn't already. This just makes R more pleasant to interact with — the little things can help a lot sometimes.

And regarding calling R intuitive — I think I wouldn't consider R intuitive *generally*, but compared with Stata's scripting language, *yes*. Maybe it's more that R is *consistent*.

Either way, thanks, this is great!

Reply

Kevin Goulding
August 2, 2011 at 7:24 am

RStudio is great – I have tended to stick with my setup of using TextWrangler along with "regular" R because it helps me quickly organize tens of different code text files. For new users, I would certainly point them to RStudio.

Thanks for your intuition-related thoughts. Consistency might be a better word to use. Whether intuitive or consistent, R's ease of use 90% of the time helped me push through the other 10% when I had to really work to make R dance to my tune.

Reply

Gauthier
October 2, 2011 at 9:00 pm

Very very nice blog!
I am also a MS in applied econ and this is very useful

Reply

Kevin Goulding
October 6, 2011 at 2:14 pm

Thanks Gauthier — If there's anything I can add to make it more useful, let me know. -Kevin

Reply

ceoriley
October 29, 2012 at 11:00 am

R and R Studio are both great. I've been self learning for about 1.5 years and still having fun with it. FYI, Coursera offers onlines courses in R.

Reply

Tony
January 6, 2013 at 5:46 pm

A nice list! Pingback: here.

Reply

dptdang
April 12, 2014 at 9:50 am

Reblogged this on Duy Dang's Blog and commented:
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Reply

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