Demographics of /r/climbharder Survey

Data from /u/higiff and analysis by /u/fmeson, RDM

Acknowledgment

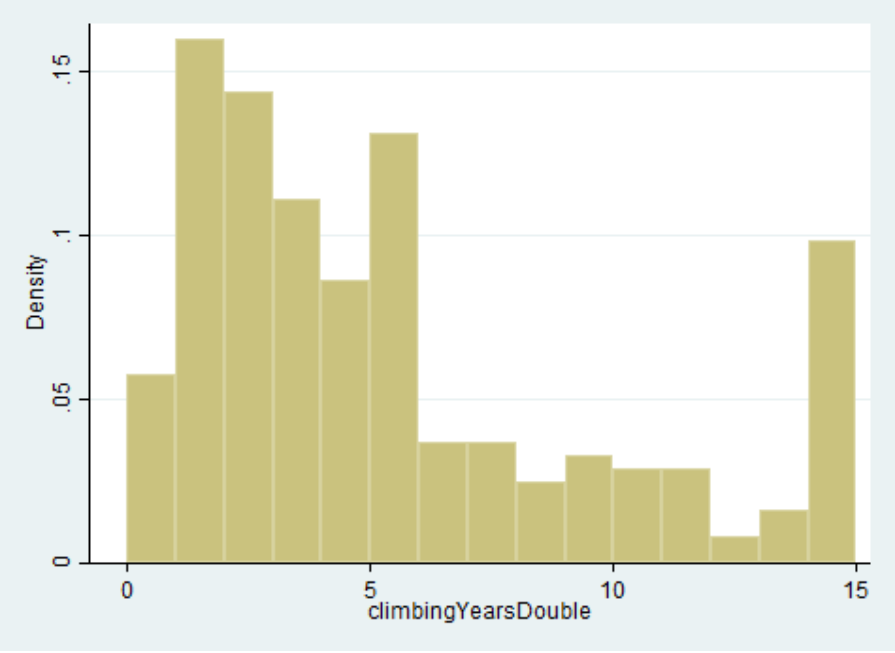
Thanks to /u/higiff for the data. It all comes from his survey he designed and carried out here: https://docs.google.com/forms/d/e/1FAIpQLSciYaa2iX79npcnPBltM7kx4EMS317jpLjTz0pgogQBmfn0DQ/viewform

Overview

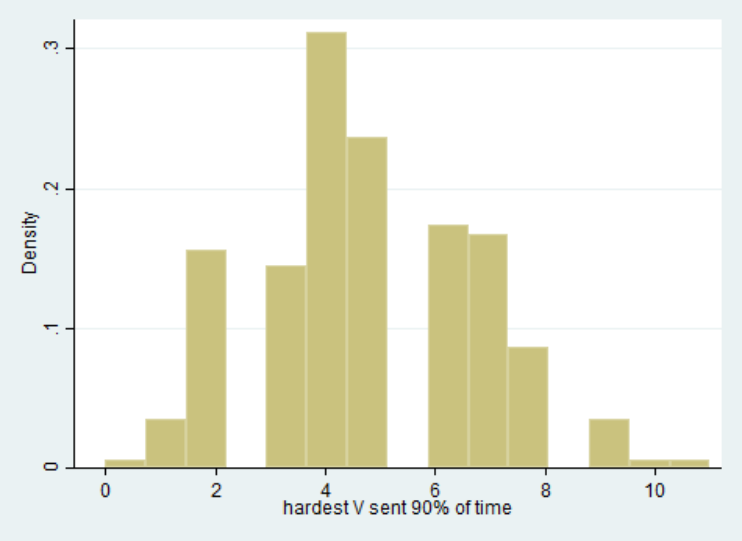
This document shows some basic demographics from the /r/climbharder survey as well as discusses some of the techniques I will be using in other documents looking at climbing skills.

Demographics

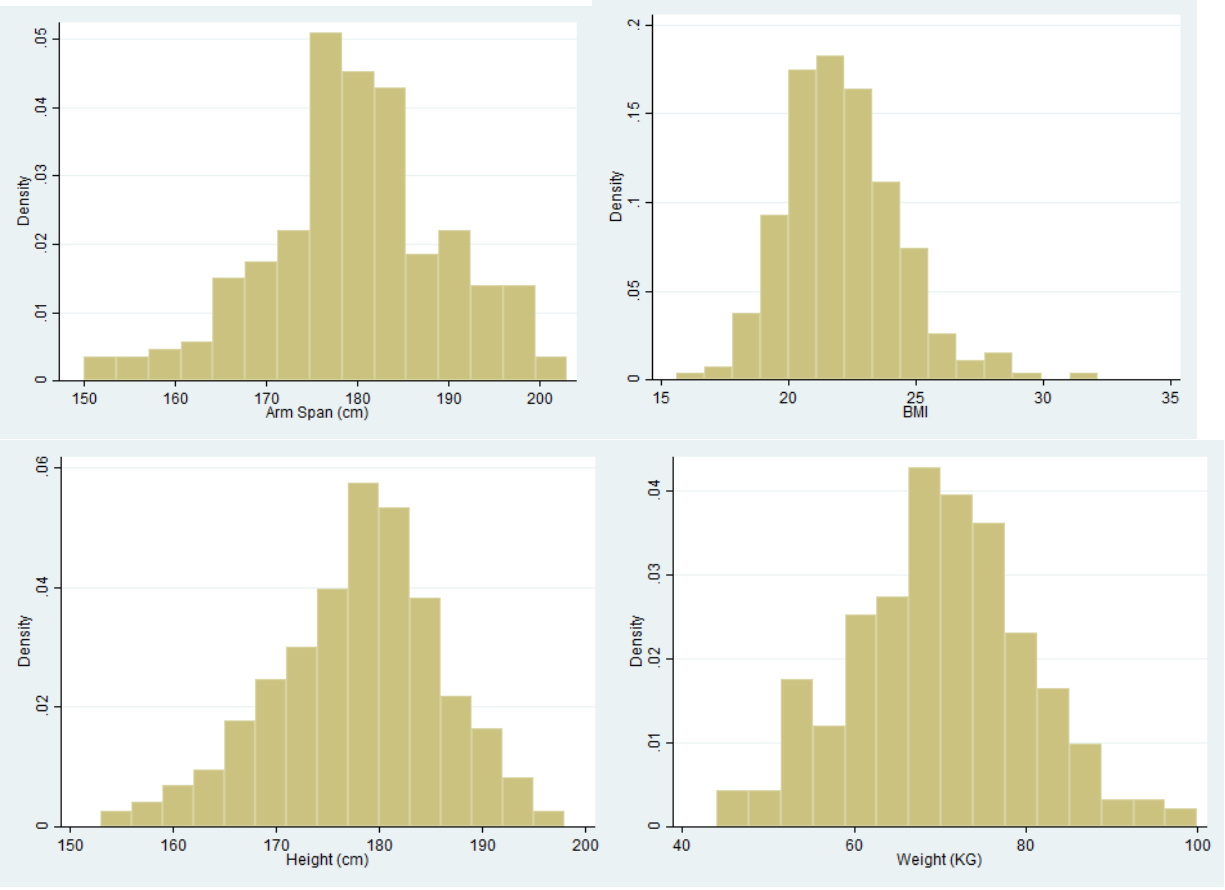
The survey contains 244 participants from /r/climbharder. 12.3% identify as female. Respondents had a wide array of years climbing:

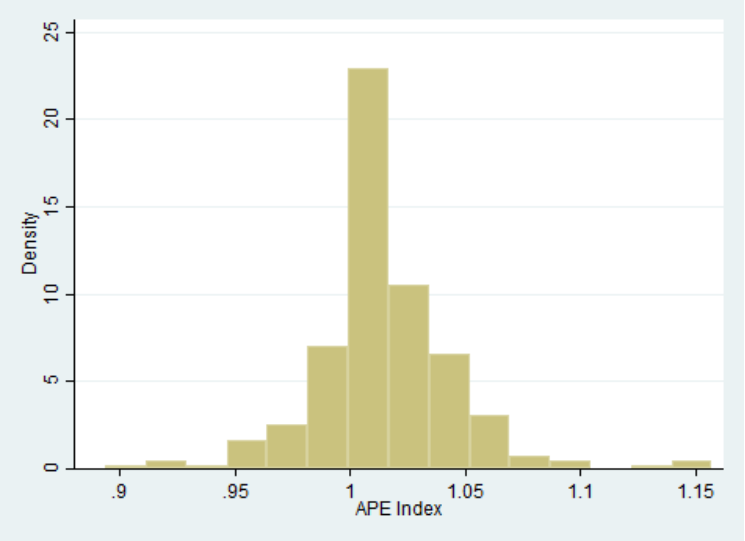


236 reported bouldering grades, and 182 reported route-climbing grades (there are no gaps, the plot added a bin for 2.5 and 5.5 for some reason):



Here are a few other histograms outlining the demographics:





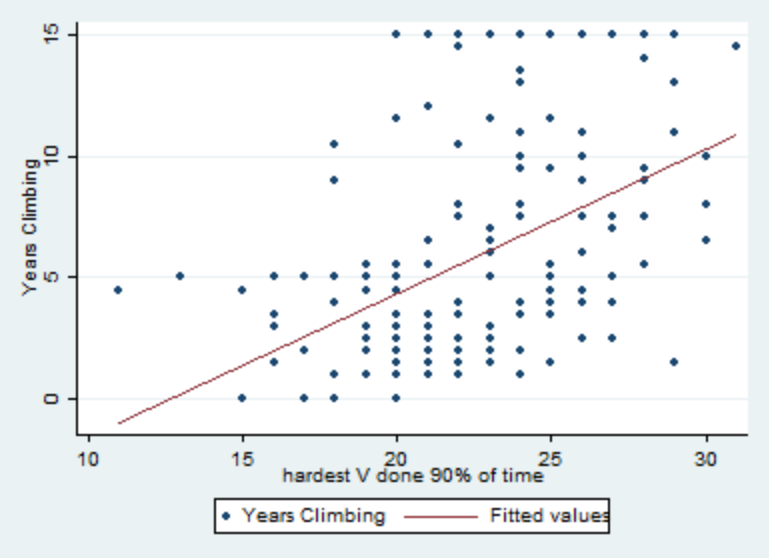
TECHNIQUE (FOR FUTURE RESULTS)

I used Stata to analyze the data collected from the survey to look for predictors of climbing performance and other metrics. Most of the conclusions done here are from simply multivariate regressions. https://en.wikipedia.org/wiki/Multivariate_statistics

Plots will often feature other fitting methods (e.g. Fractional Polynomial). Fractional polynomial fits can better show non-linear effects in the data, and would potentially be better to use for reaching conclusions, but are beyond the scope of the time I have currently to consider. (maybe later)

INTERPRETING RESULTS

A lot of care must be taken to avoid some classic problems in interpreting results. Often times I will reference a plot that looks something like this plot of hardest V grade vs years climbing (dang it that should be EWbank, not V grades for this section, but since this is just an example I am leaving it):



As well as report the fit parameters:

Years Climbing	Adj. R^2: .2203 , Root MSE: 4.08	P > |t|
hardest V done 90%	.595	0.000
constant	-7.53	0.000

What this means is that the fit has this formula:

[years climbing] = .595*[hardest V done 90%] + -7.53

The P >|t| values tell us how if the value is significant. You can read about it here: https://en.wikipedia.org/wiki/P-value I will assume a typical value of (p > |t|) < 0.050 or 95% confidence level here to interpret significant results. In the above plot, the p value for both the coefficient on the hardest V done and the constant are much less than .05 (0.000). In this one, APE is not a significant predictor of climbing performance by Years Climbing is. (note .460 > .050)

hardest V done 90%	Adj. R^2: .2184 , Root MSE: 3.25	P > |t|
Years Climbing	.595	0.000
APE index	5.965	0.460
constant	-7.53	0.089

Incidentally, this is the formula for the above multivariate fit:

[hardest V done 90%] = . 595*[Years Climbing] + 5. 965*[APE index] -7.53

However, the coefficient is in front of the APE index term is not significant!

As far as stat is concerned, it could be as low as -9 or as high as 21! So we cannot draw the conclusion that it is different from zero!

LIMITS OF THE FIT PARAMETERS

Ok, so this tells us that if you climb EWbank 25, then we can plug our number into the formula and learn how long you've been climbing for:

[years climbing] = .595*[25] + -7.53 = about 7 years

Not so fast. For one, the fit only explains a certain amount of the variance of the data (about 22% as shown in the R^2 term). That means that it only tells us that we expect a 25 EWbank climber to have been climbing for around 7 years, but as we can see, they actually probably 7+-4 years.

It is also important to remember that these regressions tell us how one variable predicts another. E.G. higher climbing skill predicts that you have been climbing longer. **Climbing skill may not cause you to have been climbing longer.** It sounds ridiculous, but remember that a significant result does not imply causation; merely that one variable predicts another. This might mean that one variable causes another, or that a third variable causes both.

How could you predict causation? With a fully experiment with multiple groups and interventions. E.G. Two groups: one does repeaters, one does max hangs, and then we see who improves the most.