Exploratory Analysis

Data Transformations

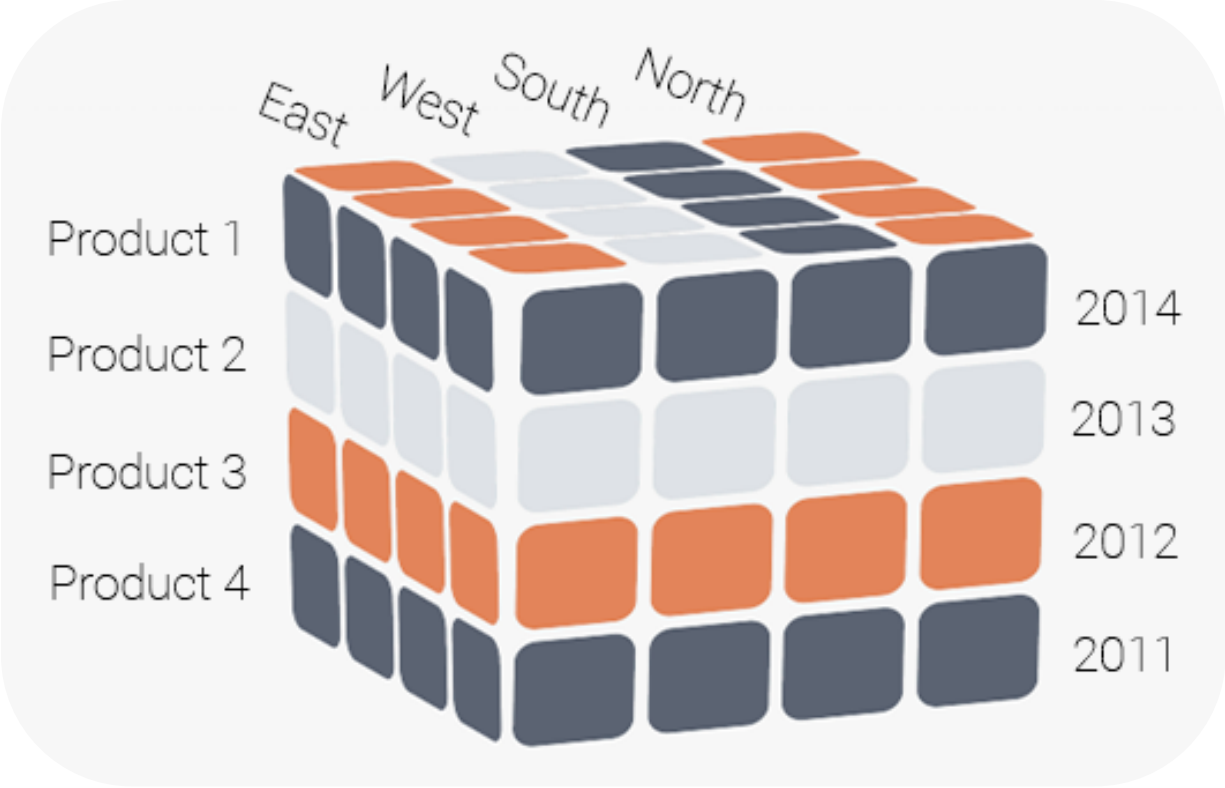
You've already done this with DataFrames in Pandas or R.

They look like this:

	account	campaign	date	successes	trials	rate
455	1	Campaign #76	2012-08-14 11:56:20 -0400	2	2	1.000000
449	1	Campaign #78	2012-08-14 12:06:20 -0400	2	2	1.000000
438	1	Campaign #87	2012-08-14 18:06:30 -0400	27	118	0.228814
431	1	Campaign #95	2012-08-15 00:07:42 -0400	22	118	0.186441
422	1	Campaign #99	2012-08-15 01:27:48 -0400	25	120	0.208333

Data Transformations

But you think of them like this:



Common Transformations

Normalize

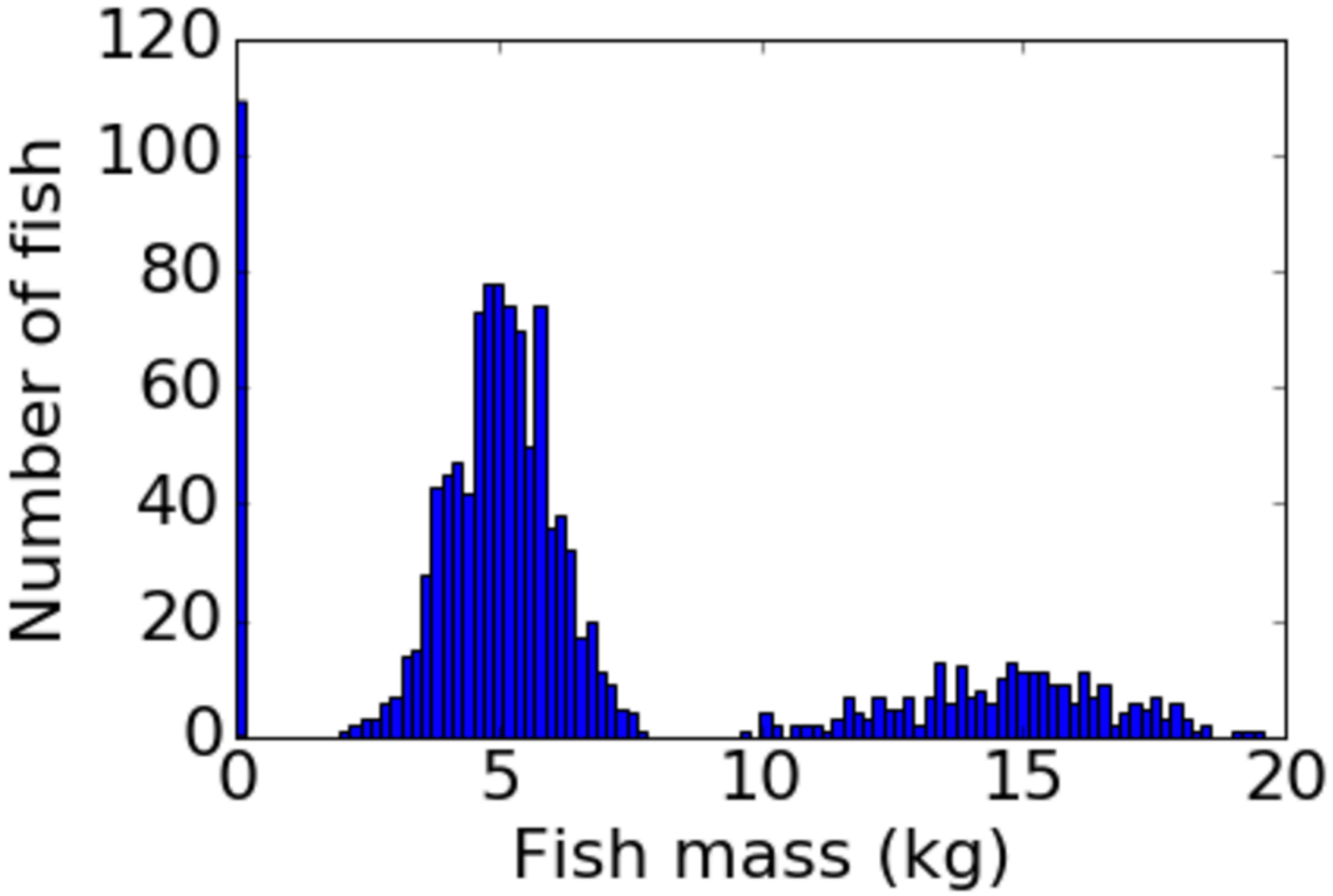
Log

Power

Binning

Grouping

What Does A Look Like?

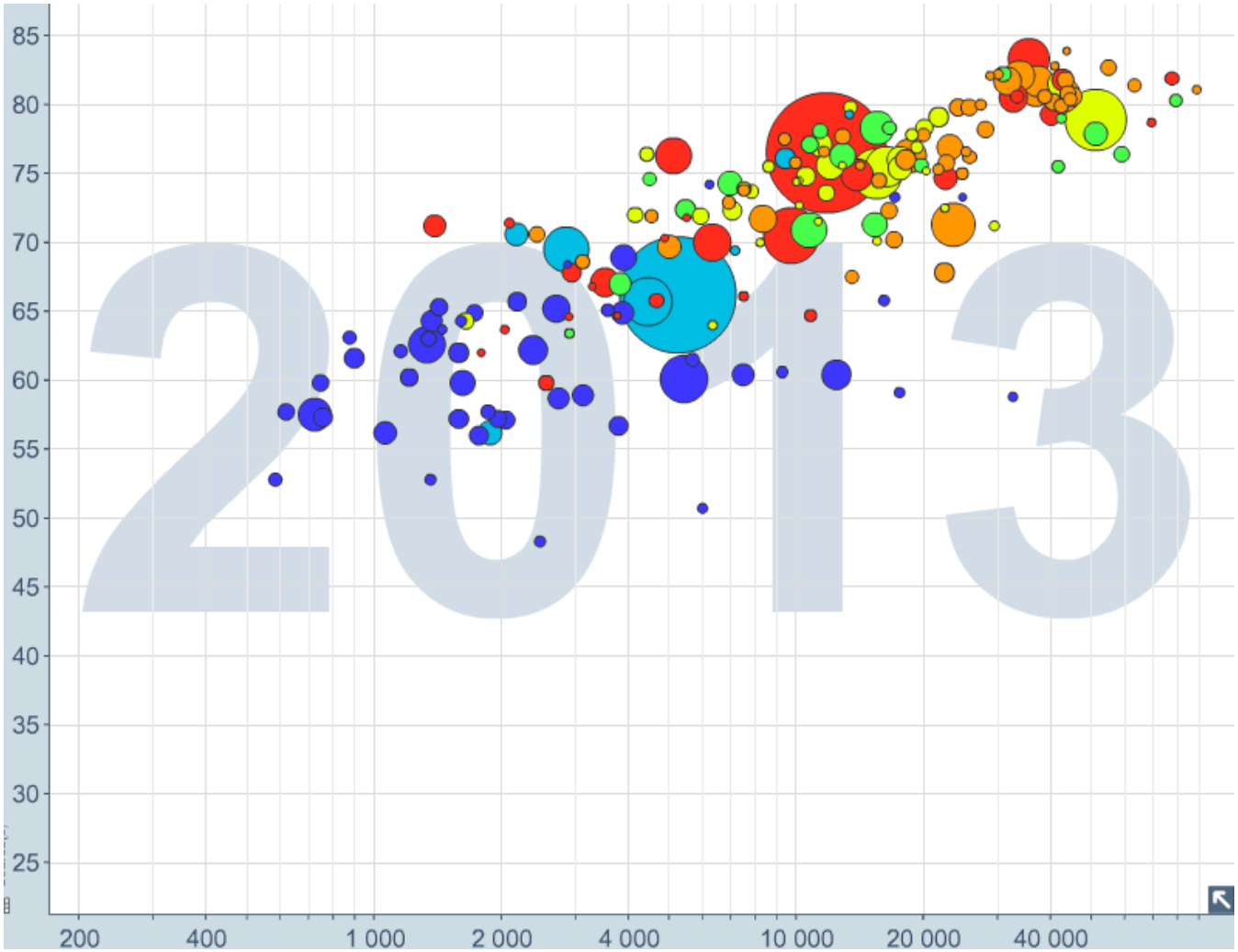


Histograms, Histograms, Histograms

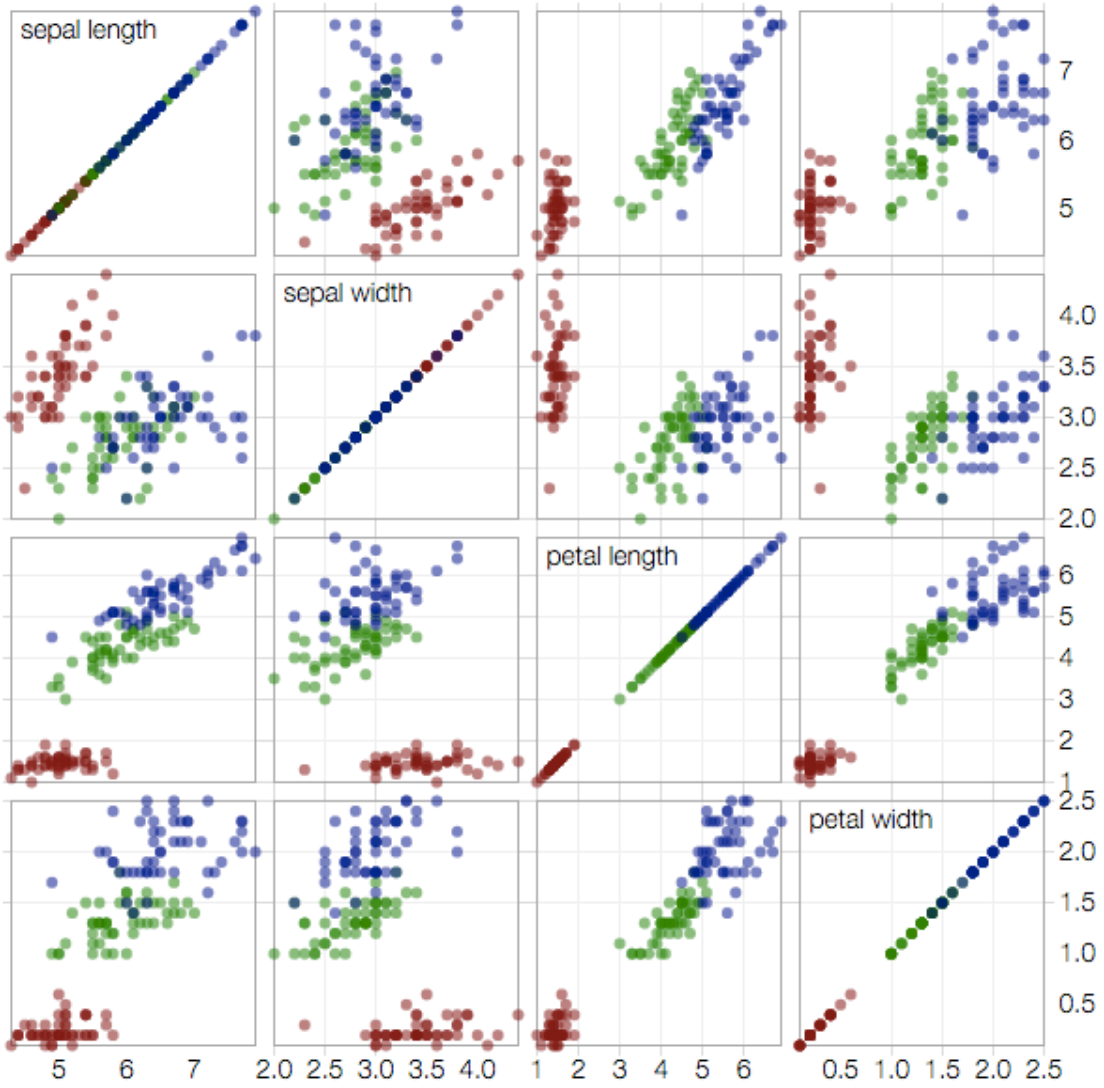
An cornerstone in the EDA toolbox!

“Above all else, show the data”

What's the Relationship Between A and B?

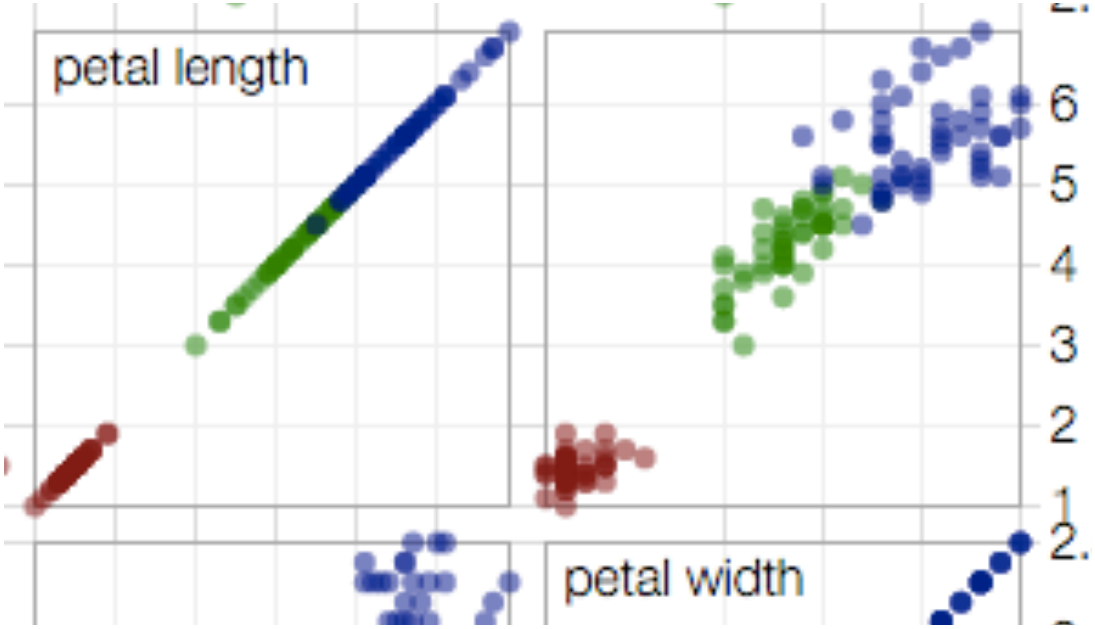


Hypothesis Generation



Hypothesis Testing

E.g., given



we find R^2=… and p=...

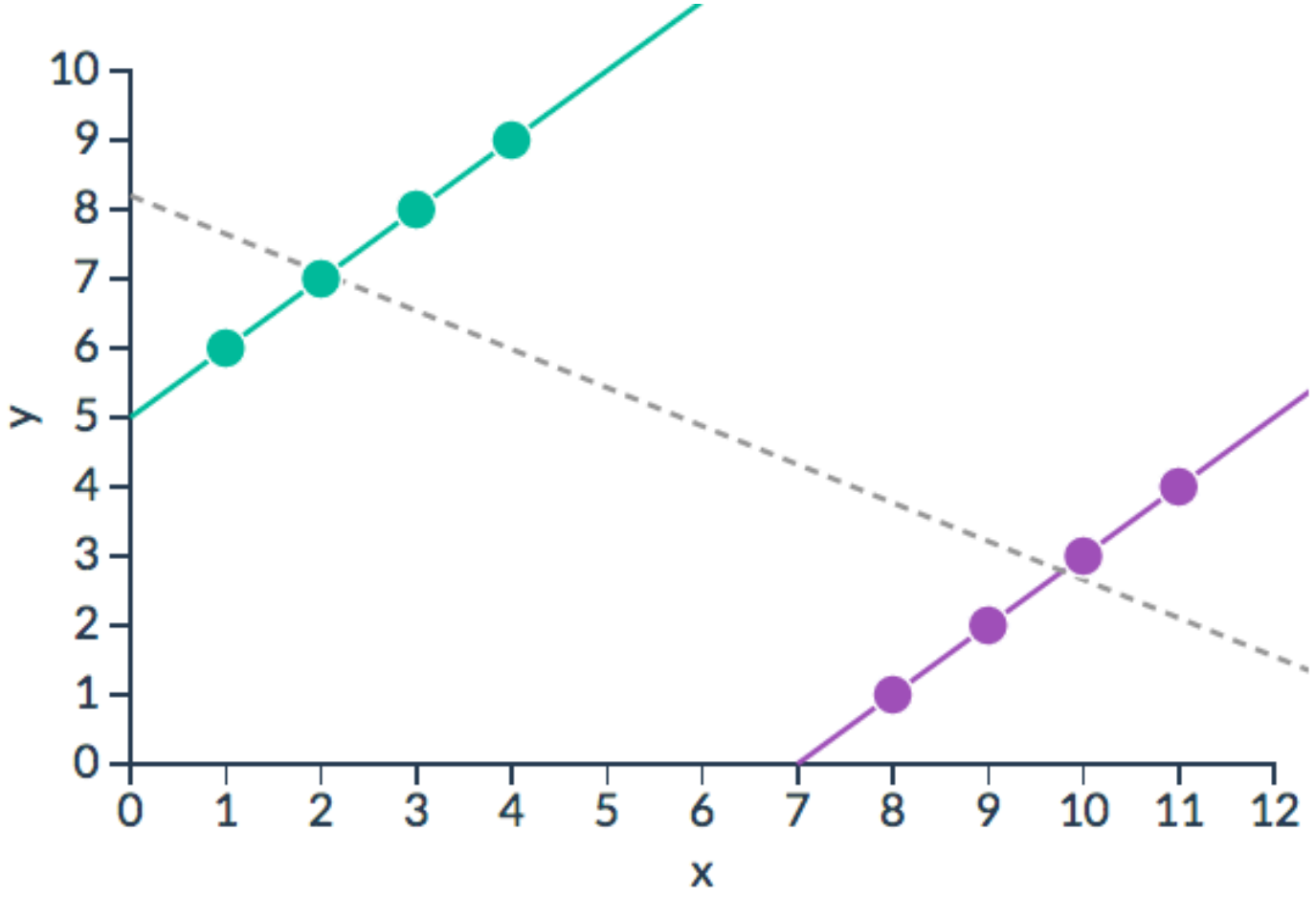
Mantras

Be skeptical: What assumptions have been made?

Explore iteratively: Start simple, keep asking questions.

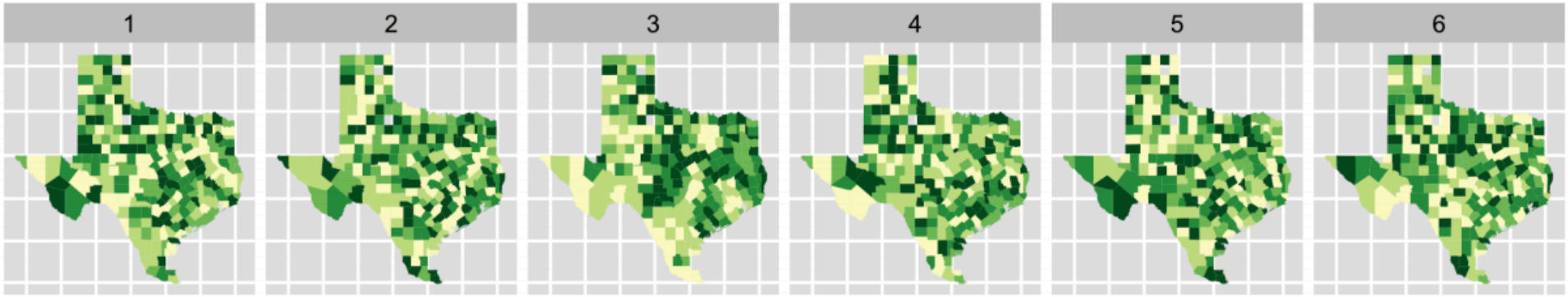
Avoid fixation: Use a variety of graphics to inspect more angles.

Simpson (Yule)



http://vudlab.com/simpsons/

Find the Real Data



Wickham, et al. 2010

Iterating

[example exploratory iteration]

Iterating

Measuring the happiness of words

Goal:

- Our overall aim is to assess how people feel about individual words.
- With this particular survey, we are focusing on the dual emotions of happiness and sadness.

Time required:

- 6 to 8 minutes.

Instructions and Example:

- You are to rate individual words on a 9 point unhappy-happy scale:

sunshine

1. Read the word, ("sunshine" in the above example) and observe your emotional response.
2. Click on the face that best corresponds to your response.

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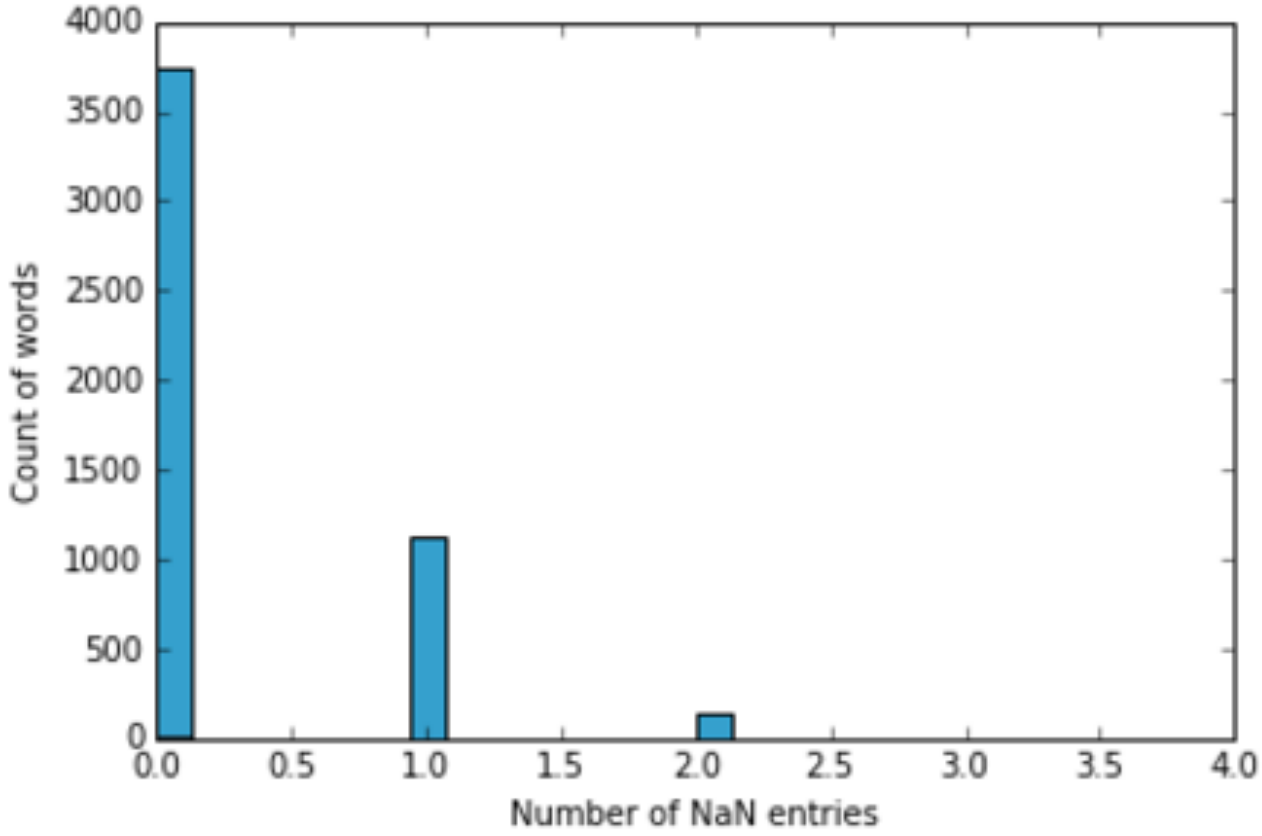
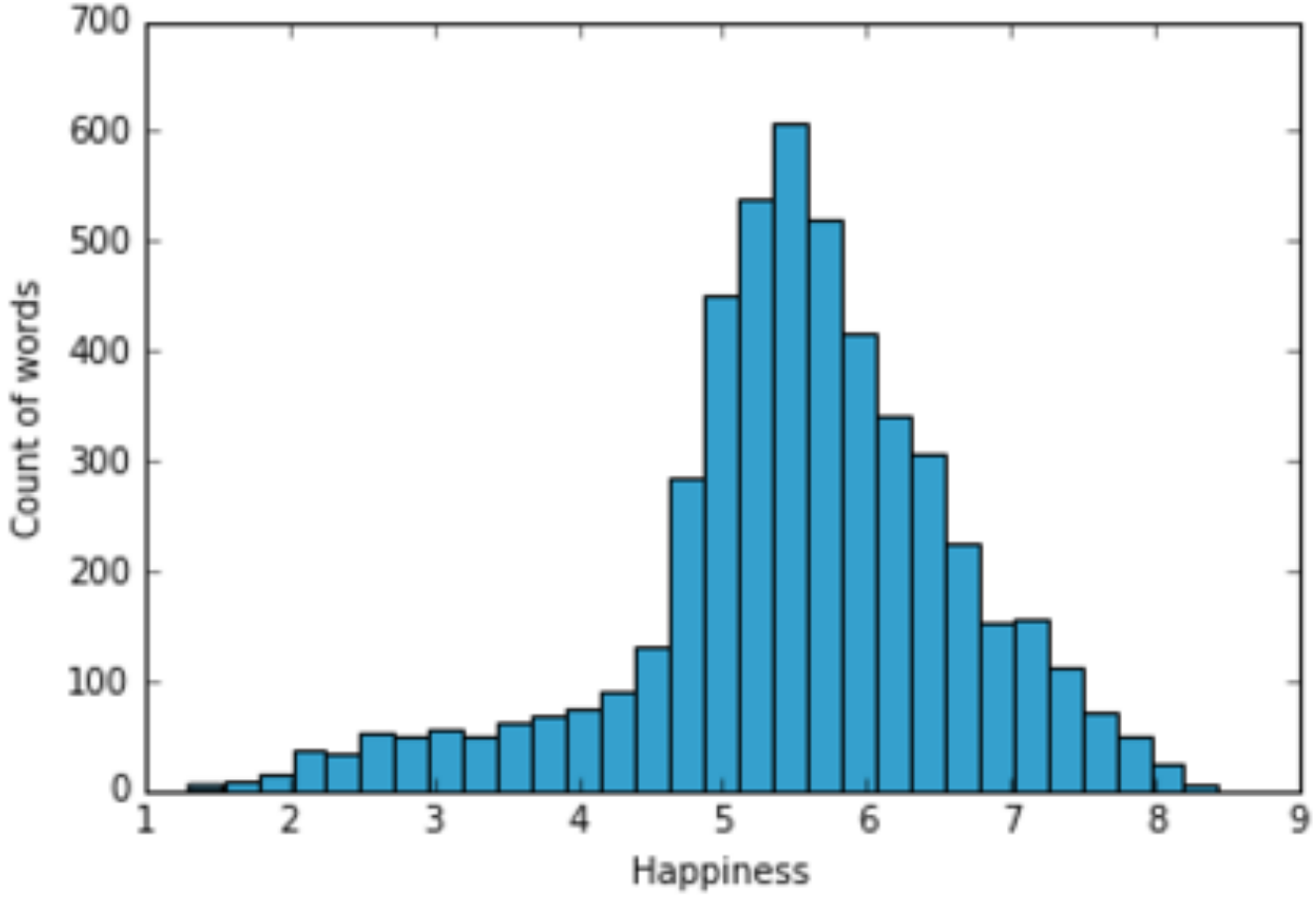
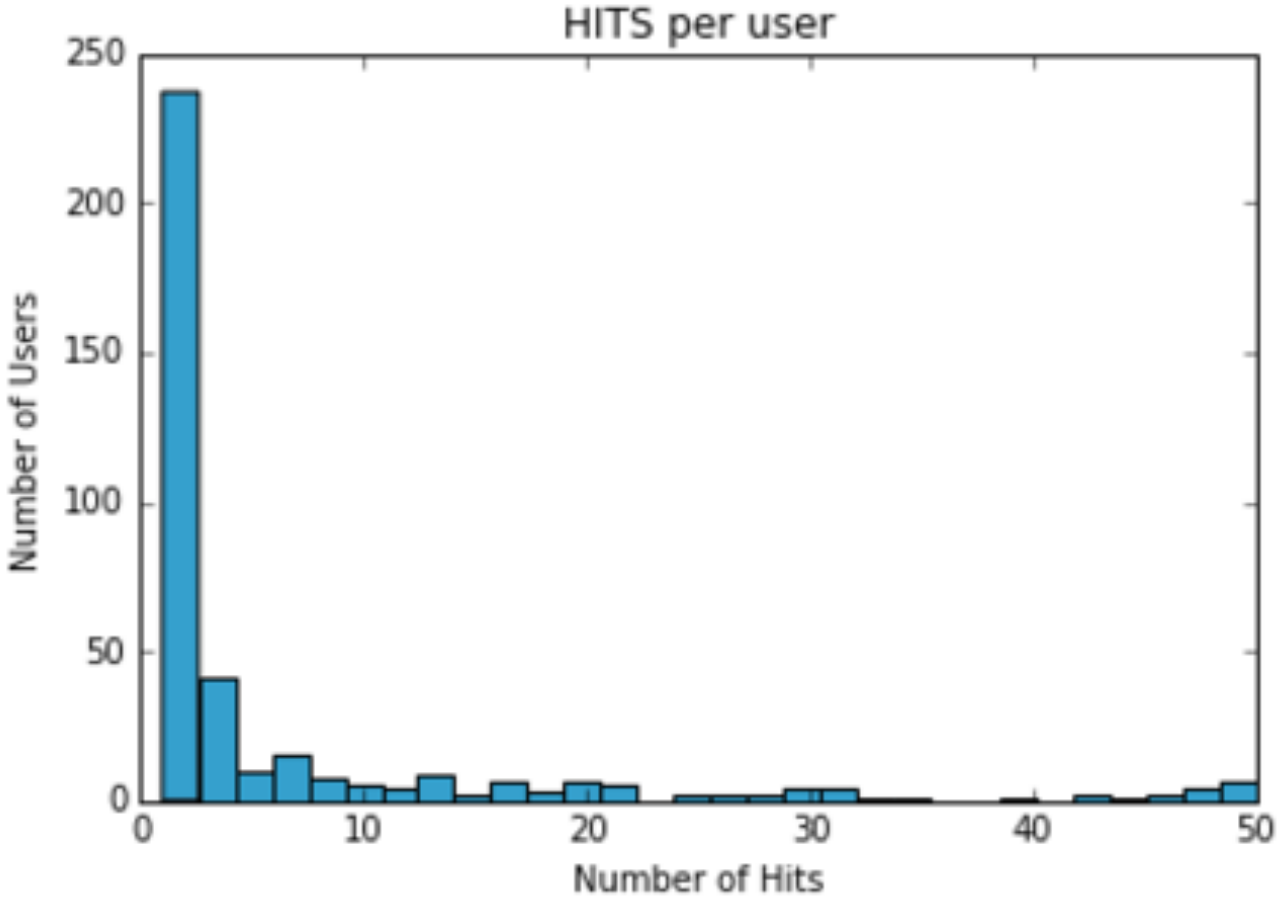
Check on the NaNs…



The Pollyanna Hypothesis Holds!

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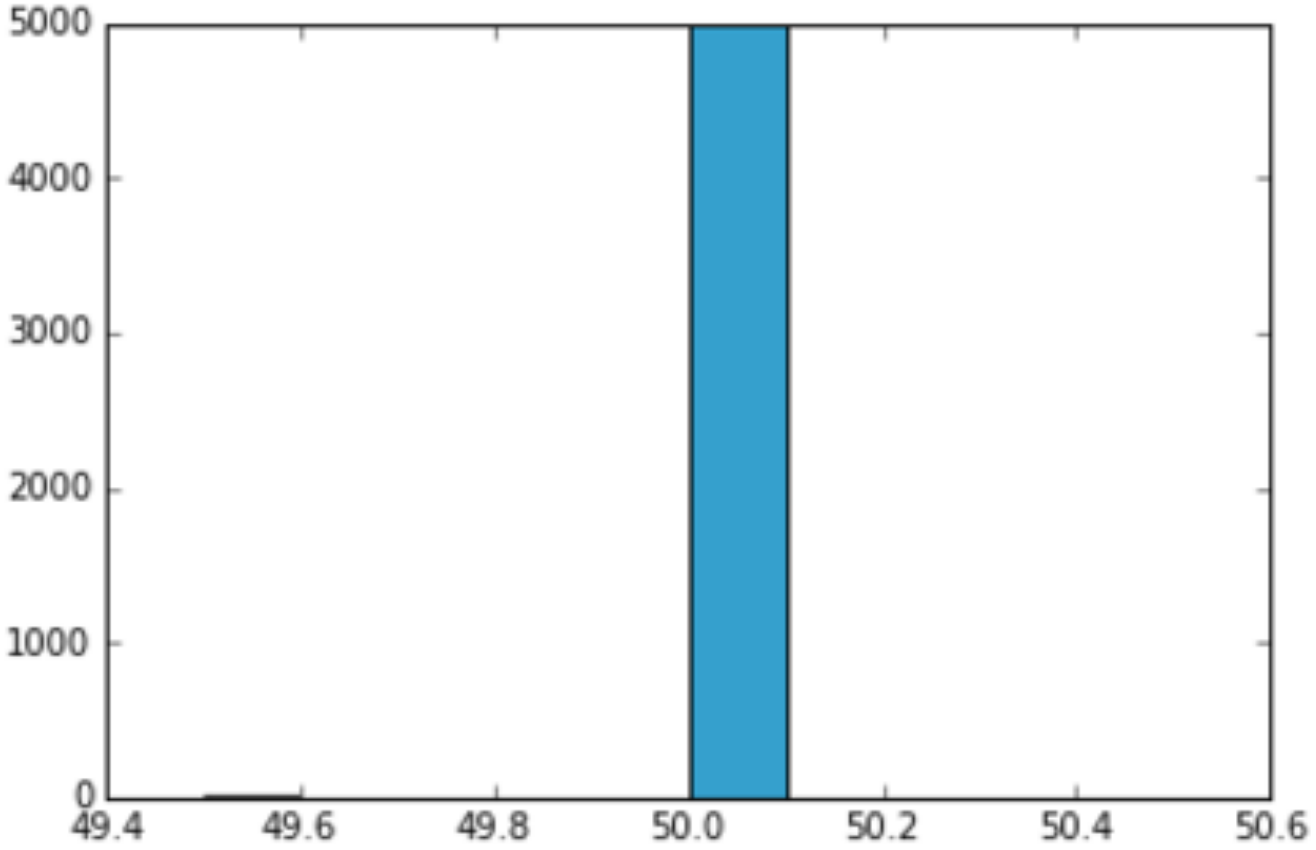
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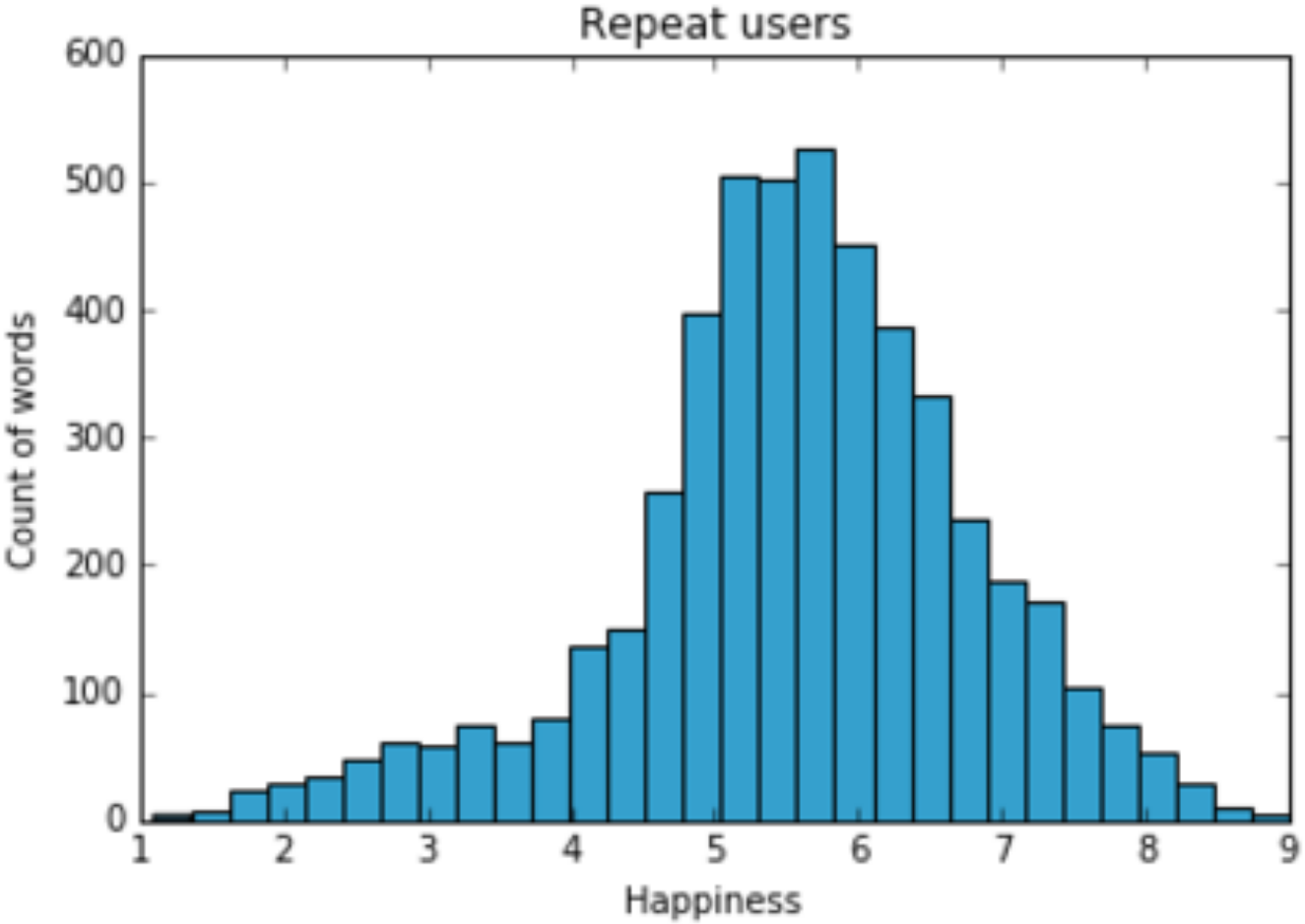
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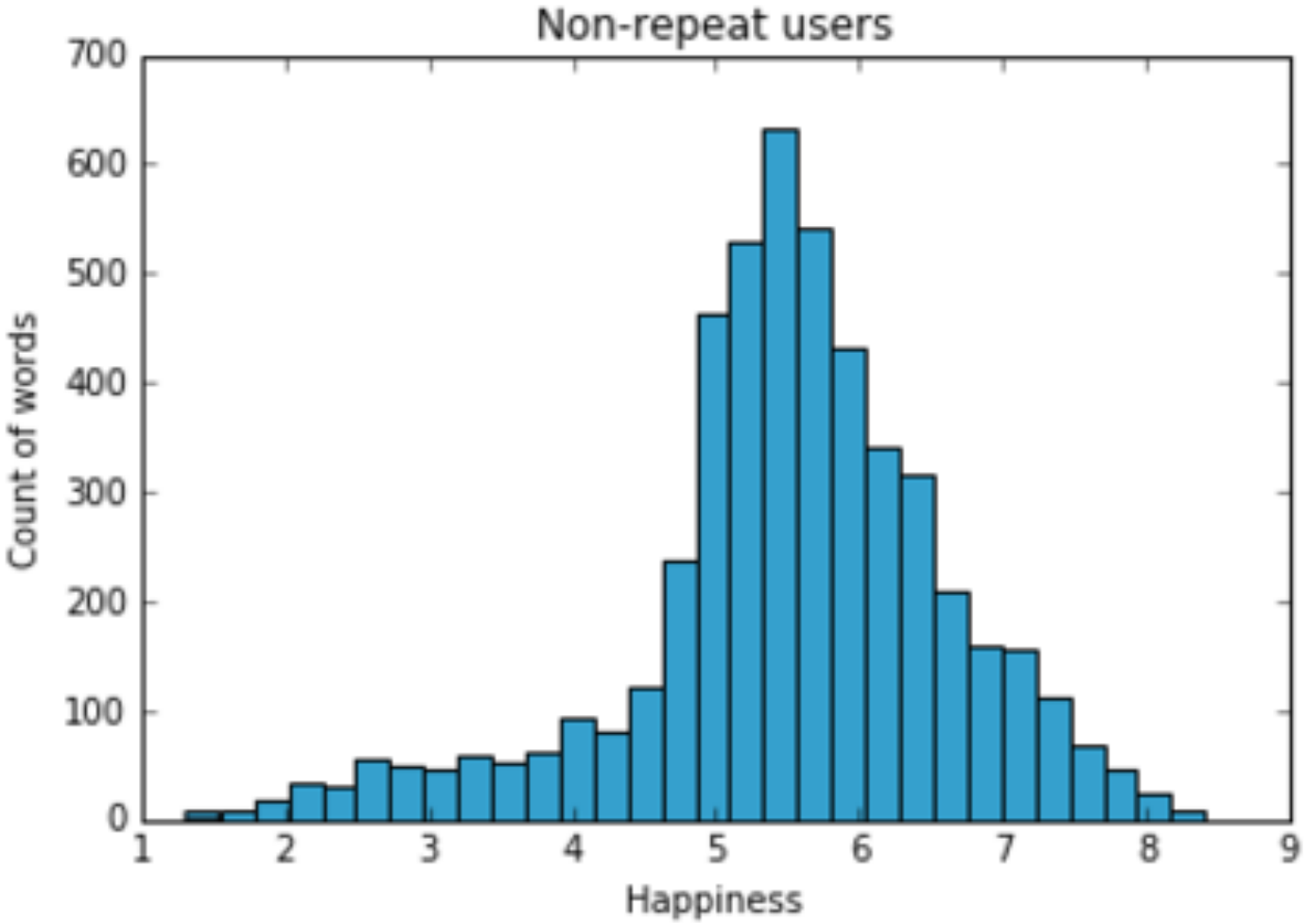
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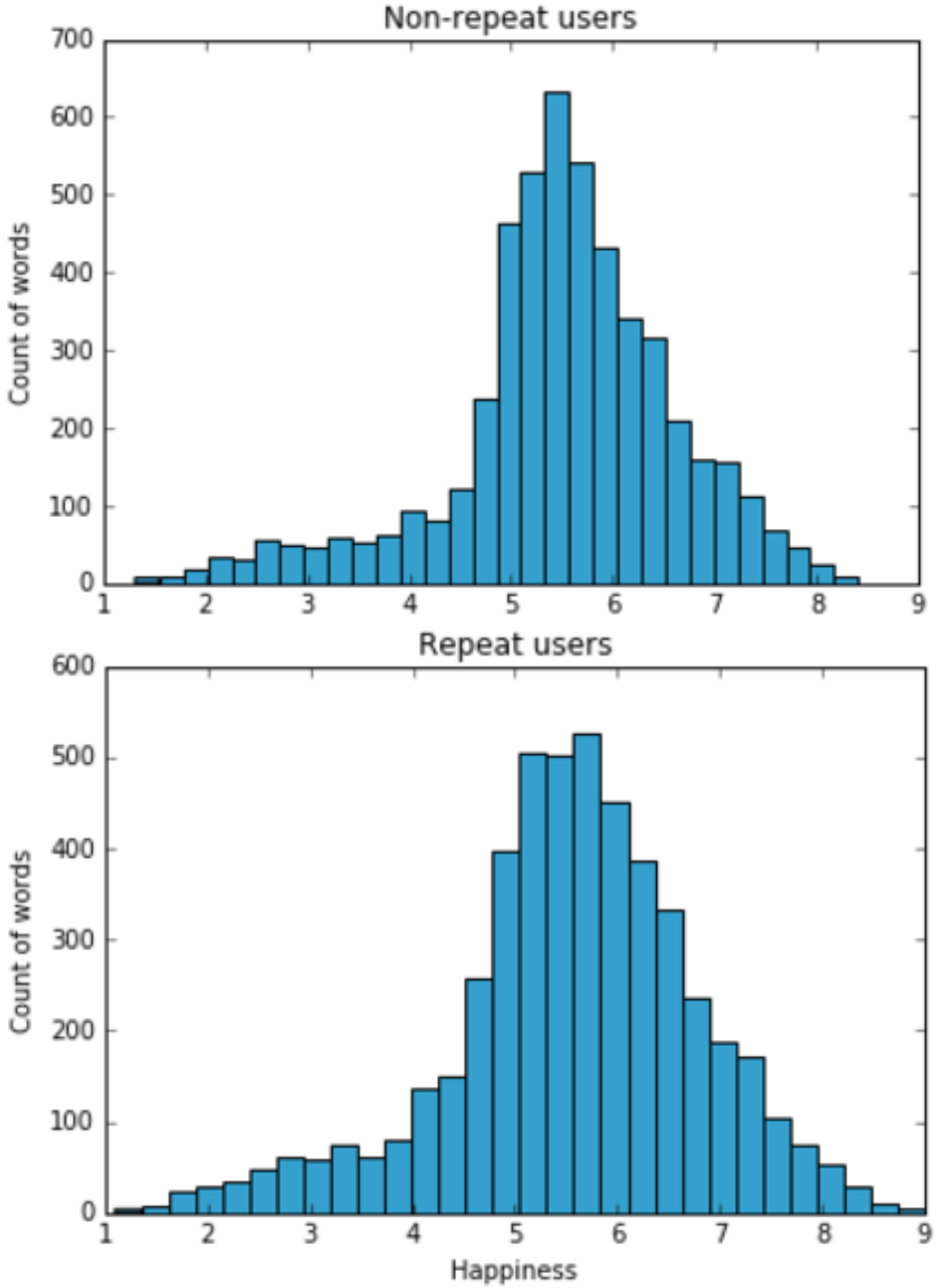
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Happiness

Berkeley SCHOOL OF INFORMATION