

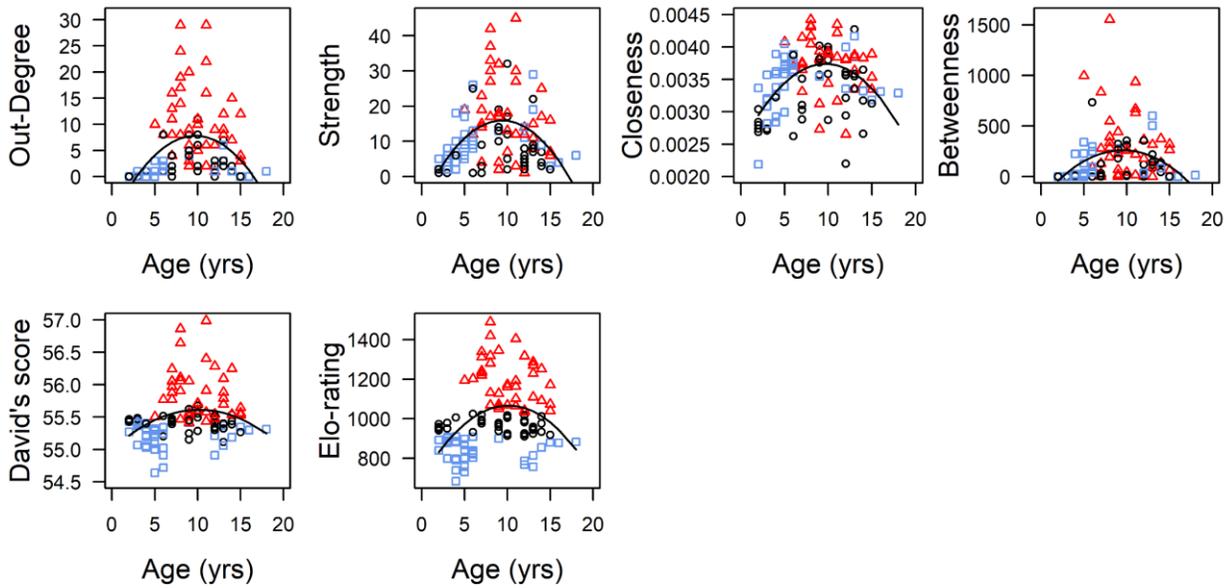
Supplementary Data SD2: Data Supporting Tests of Age and Mass versus Network and Dominance Measures

Scatterplots of Age and Mass vs. Network and Dominance Measures

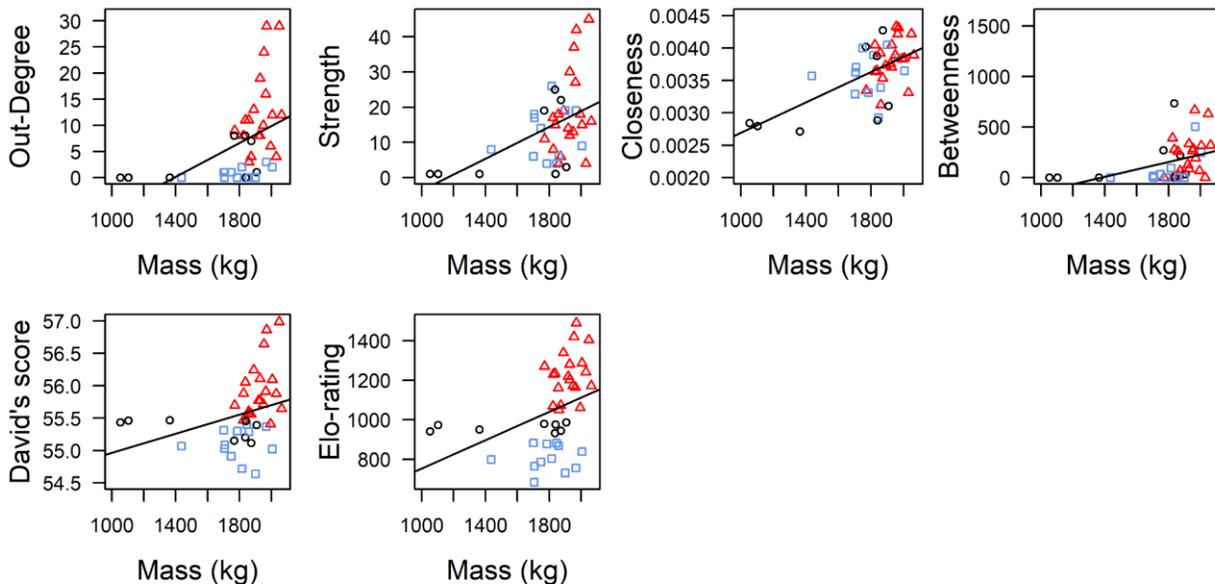
Relationships between male age and mass vs. the four network measures (top row) and traditional dominance measures (bottom row). Lines in the age graphs indicate the polynomial fit to the data and lines in the mass graph indicate a linear fit to the data, with significant relationships depicted with solid lines. The data points are color and shape coded according to the 33% and 66% quantiles of Elo-rating:

- Blue squares = Elo-rating < 910 (low dominance)
- Black circles = Elo-rating ≥ 910 and < 1026 (mid dominance)
- Red triangles = Elo-rating ≥ 1026 (high dominance)

Age Scatterplots:



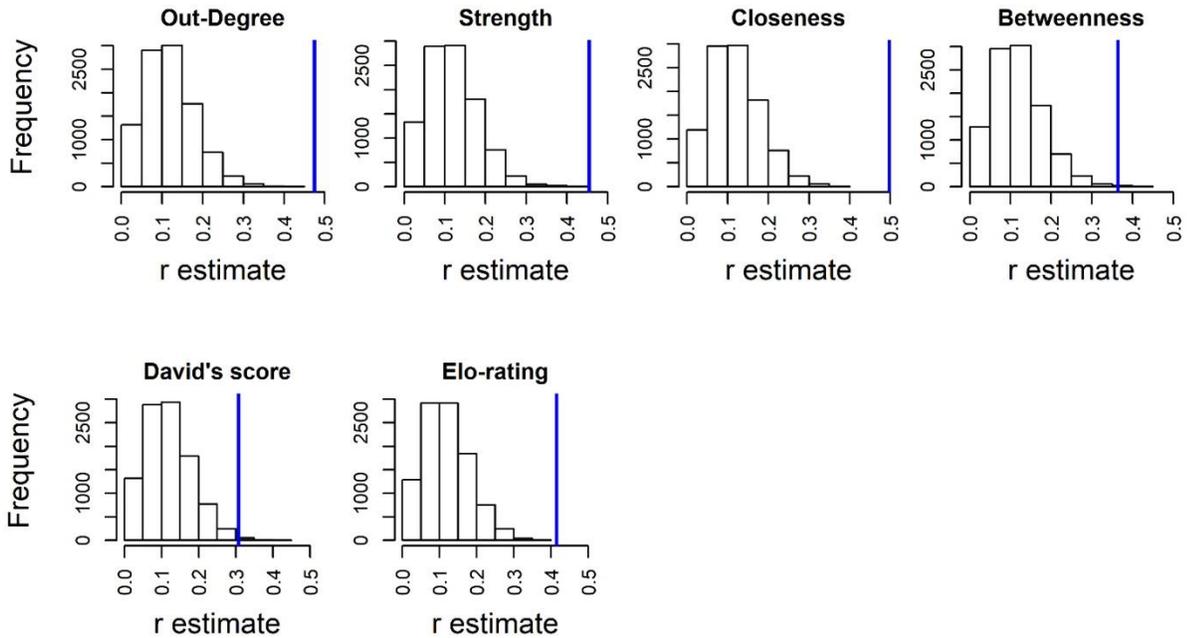
Mass Scatterplots: using the full mass dataset of N=40



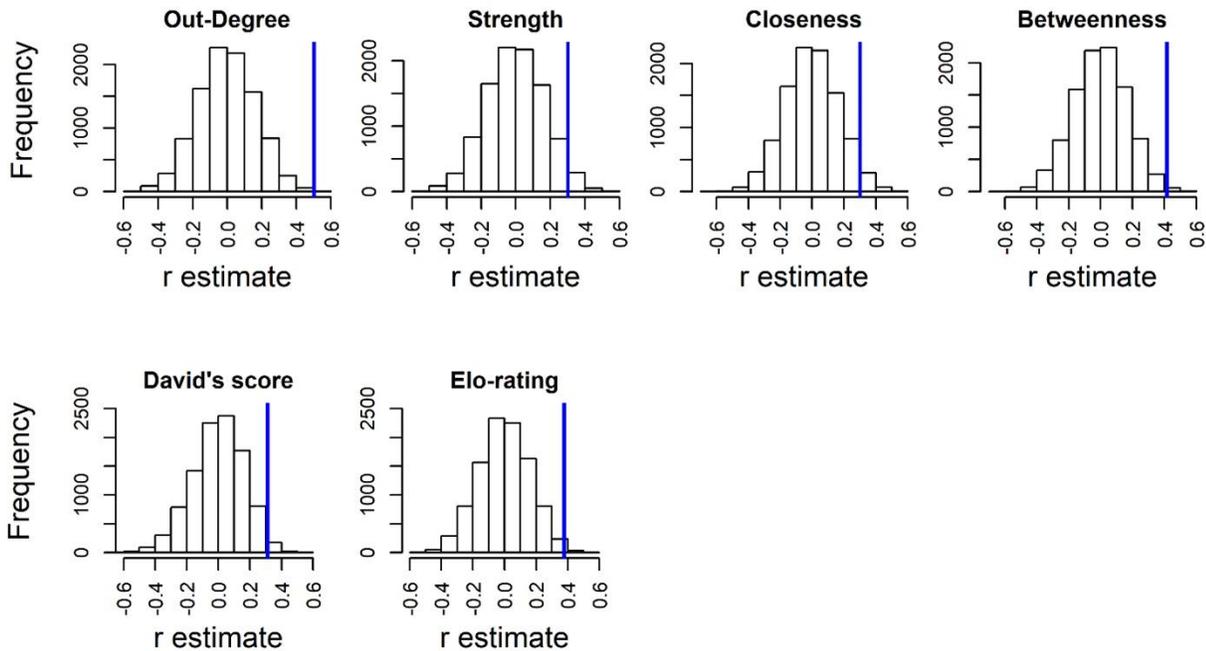
Randomization Histograms for Age and Mass of Male Bison vs. Network and Dominance Measures

Histograms of correlation coefficients (r) for permutations of ID. Randomization procedure was conducted using social network measures (top row) and traditional dominance measures (bottom row). The blue line indicates the observed correlation coefficient (r) for each test.

Age Histograms:



Mass Histograms: using the full mass dataset of N=40



Supplemental Analysis of Mass Dataset After Removal of Outliers

In a supplemental analysis of mass, we removed four individuals whose mass values were outliers in the dataset. These individuals included the four youngest males: two 2 year olds and two 3 year olds. After removal, we re-ran the linear regressions to assess the relationship between mass (N=36) and the social network measures.

Table SD2-1. Degrees of freedom (DF), correlation coefficient (*r*), 95% confidence intervals, *P*-value after randomization, adjusted *P*-value from the 4-way Benjamini and Hochberg (B-H) false discovery rate method (using the four network centrality measures), and adjusted *P*-value from the 6-way B-H false discovery rate method (using the four network centrality measures and two traditional dominance measures) for **secondary analysis of mass without four outliers.**

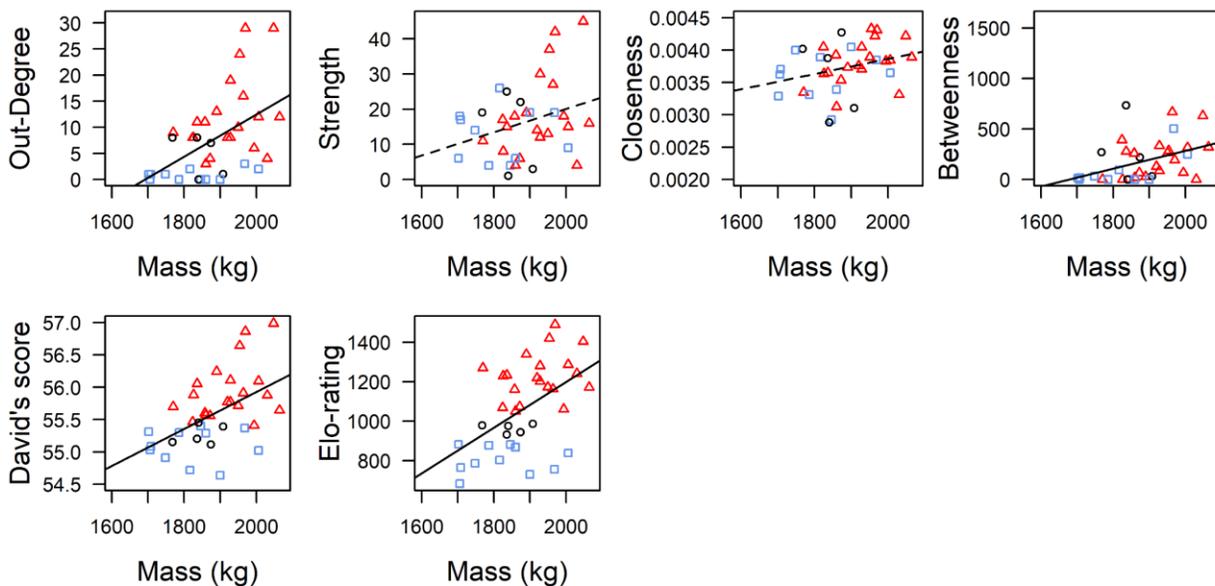
Factor of Interest	Measure	DF	Correlation Coefficient (<i>r</i>)	95% Confidence Interval	<i>P</i> -value	4-way B-H Adjusted <i>P</i> -value	6-way B-H Adjusted <i>P</i> -value
Mass (N=36)							
	Out-degree	34	0.502	0.267 - 0.684	0.0011	0.004	0.002
	Strength	34	0.302	-0.008 - 0.553	0.070	0.073	0.073
	Closeness	34	0.302	0.042 - 0.530	0.073	0.073	0.073
	Betweenness	34	0.416	0.128 - 0.667	0.011	0.022	0.016
	David's Score	34	0.513	0.266 - 0.711	0.0008		0.002
	Elo-rating	34	0.520	0.229 - 0.744	0.0003		0.002

Scatterplots of Subset Analysis of Mass vs. Network and Dominance Measures

Relationships between male mass (N=36) vs. the four network measures (top row) and traditional dominance measures (bottom row). Lines indicate a linear fit to the data, with significant relationships depicted with solid lines. Mass dataset does not include the four low outliers from the full mass analysis.

The data points are color and shape coded according to the 33% and 66% quantiles of Elo-rating:

- Blue squares = Elo-rating < 910 (low dominance)
- Black circles = Elo-rating ≥ 910 and < 1026 (mid dominance)
- Red triangles = Elo-rating ≥ 1026 (high dominance)



Randomization Histograms for Subset Analysis of Mass (N=36) vs. Social Network Measures

Histograms of correlation coefficients (r) for permutations of ID. Randomization procedure was conducted using social network measures. The blue line indicates the observed correlation coefficient (r) for each test. Data uses the subsetting mass dataset (N=36) without four low outliers from the original mass analysis.

