

Pearson Correlation Analysis

H0: Pearson $r = 0$.

H1: Pearson r is not 0.

Top pairwise correlations by absolute r :

variable_1	variable_2	n_pairwise	pearson_r	r_squared	t_statistic	df	p_value_two_tailed	ci95_lower	ci95_upper
G2	G3	649	0.9185480	0.84373043	59.103989	647	5.642401e-263	0.9056064	0.9297806
G1	G2	649	0.8649816	0.74819322	43.845529	647	6.373795e-196	0.8442202	0.8831514
G1	G3	649	0.8263871	0.68291568	37.329167	647	1.617571e-163	0.8003265	0.8493311
Medu	Fedu	649	0.6474766	0.41922596	21.610889	647	2.190291e-78	0.6004354	0.6900521
Dalc	Walc	649	0.6165614	0.38014794	19.919775	647	3.239244e-69	0.5664804	0.6621049
failures	G3	649	-0.3933155	0.15469712	-10.881458	647	1.934153e-25	-0.4564597	-0.3262293
goout	Walc	649	0.3886798	0.15107196	10.730220	647	7.812237e-25	0.3213306	0.4521167
failures	G2	649	-0.3857822	0.14882792	-10.636179	647	1.848633e-24	-0.4494006	-0.3182705
failures	G1	649	-0.3842105	0.14761769	-10.585323	647	2.939047e-24	-0.4479268	-0.3166112
freetime	goout	649	0.3463518	0.11995956	9.391139	647	9.968392e-20	0.2767680	0.4123223
age	failures	649	0.3199679	0.10237949	8.590377	647	6.472062e-17	0.2491418	0.3873897
Medu	traveltime	649	-0.2650790	0.07026688	-6.992755	647	6.736153e-12	-0.3352019	-0.1920354
Medu	G2	649	0.2640353	0.06971464	6.963155	647	8.193734e-12	0.1909543	0.3342053
studytime	G1	649	0.2608754	0.06805596	6.873696	647	1.474934e-11	0.1876823	0.3311873
Medu	G1	649	0.2604723	0.06784581	6.862301	647	1.588891e-11	0.1872650	0.3308022

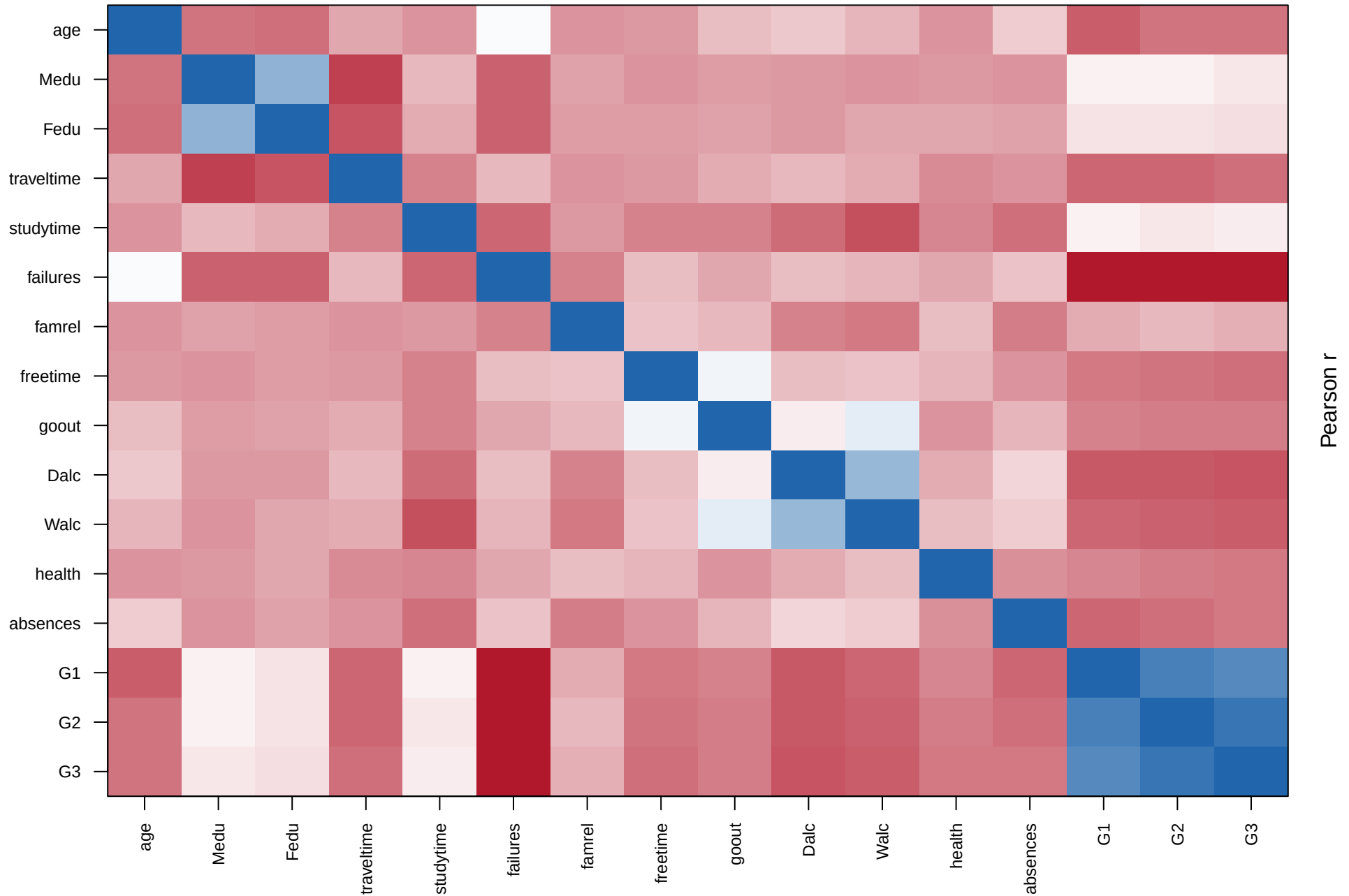
decision_alpha_05 interpretation
Significant correlation very strong positive
Significant correlation very strong positive
Significant correlation very strong positive
Significant correlation strong positive
Significant correlation strong positive
Significant correlation moderate negative
Significant correlation moderate positive
Significant correlation moderate negative
Significant correlation moderate negative
Significant correlation moderate positive
Significant correlation moderate positive
Significant correlation weak negative
Significant correlation weak positive
Significant correlation weak positive
Significant correlation weak positive

Assumption summary:

variable	n	skewness	kurtosis	iqr_outlier_count
age	649	0.414870724	0.05230014	1
Medu	649	-0.029812055	-1.26551648	0
Fedu	649	0.214348962	-1.11576482	0
traveltime	649	1.241886228	1.07851201	16
studytime	649	0.696388540	0.01899932	35
failures	649	3.078417657	9.70042301	100
famrel	649	-1.100827166	1.31604012	51
freetime	649	-0.180440385	-0.41113444	45
goout	649	-0.008540284	-0.87459624	0
Dalc	649	2.132022545	4.28413198	34

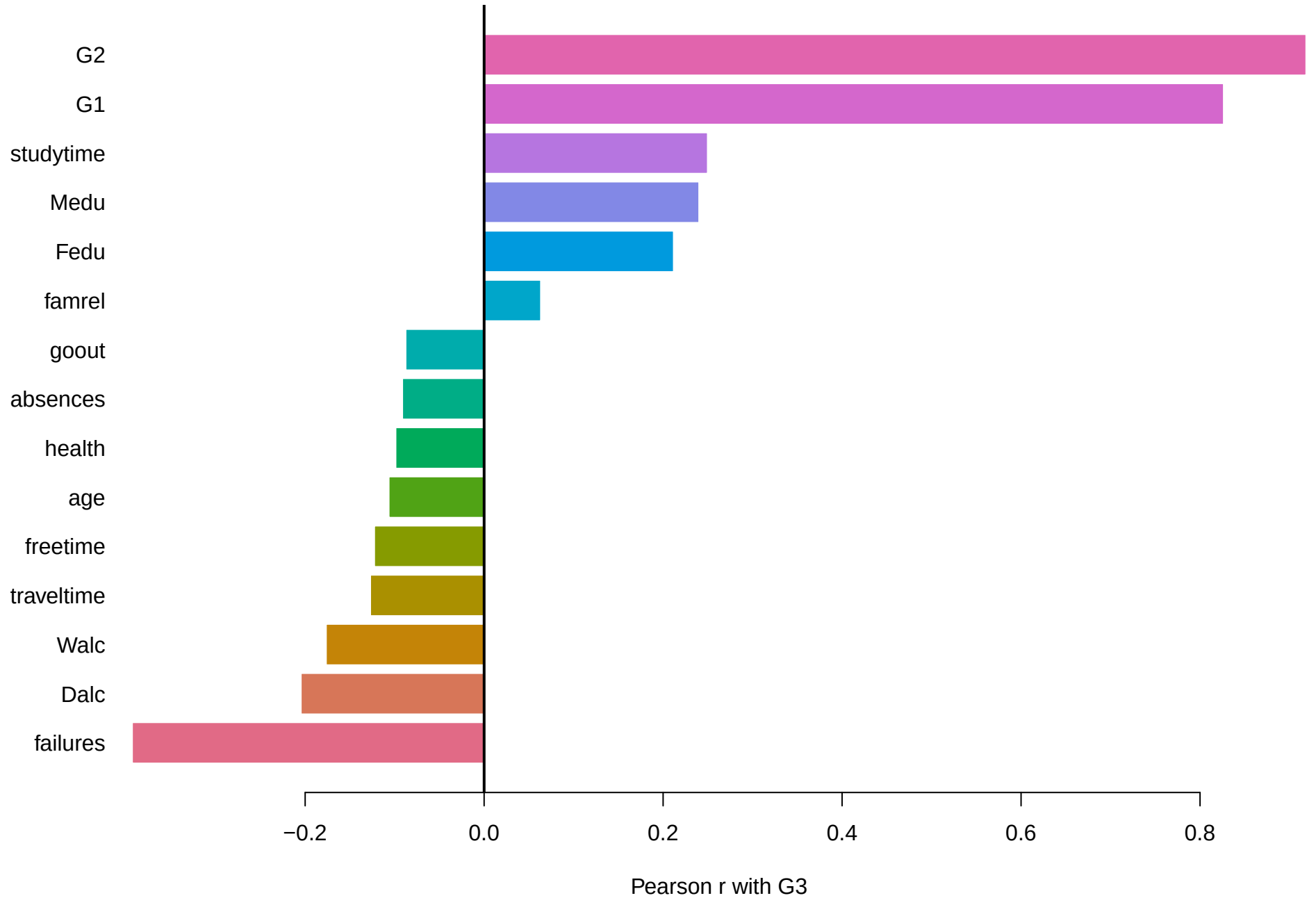
Pearson Correlation Matrix

Values near +1 or -1 indicate stronger linear association.



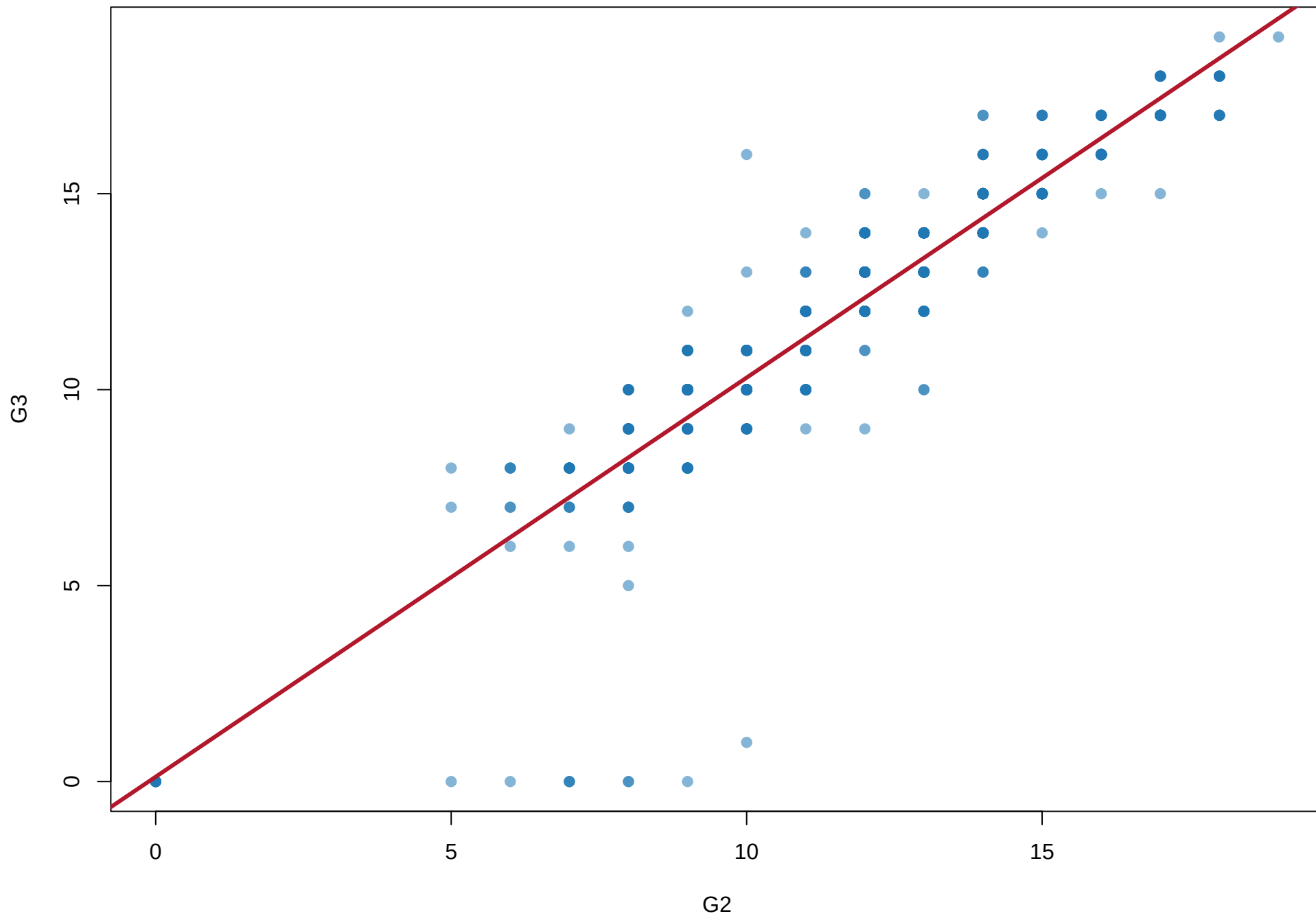
Pearson Correlations with G3

Ranking of positive and negative linear relationships.



Pearson Correlation: Strongest Pair Scatterplot

G2 vs G3 ; $r = 0.919$; $p = 5.642e-263$



Pearson Correlation Assumption Context

Variables with many outliers should be checked before reporting Pearson r.

