Correlation Matrix

timened to	100	1961	Heli	SWEEK	0.0004	900	best .	Nem	3004	Del.	W.	100	Hearts	м.	44	**
**	и	+300045803200	+3043960000	remerzacou	********	100001941734	necessorius)	***************************************	3230007042940	61339044.044	123790043634	4.00(07040)7400	41709999409	4,948)454573	4394900000	436254863640
No.	4.168000000011	1.0	0403-0682390447	4173900909031	13404007000	4.(38008/3004))	0.0004-04030-04	4.0000000000000000000000000000000000000	TOMORRECTOR	4,00040000000	00432909981	-0.000702500000	61963HENRSH	130408943047	4.0004940000	0.073040000000
Note	430-0000020	ENCHOLIDRONII	39	41309640738	000014890340	4.00004404798	4100459000	*CERCONCEL	10000000000	0.0000000000000000000000000000000000000	43030756440	10046049478	0.00403870288	120000001900	13448080830	0.20-000,000,000
tration	10740723163A	4.77CREMOVEM	42804042130	54	*300000000	100287400627	44040444400	+0700H03343	restornouse	4.13000000000	3.34235046004	101309000014	осположен	4.96000000000000000000000000000000000000	+2604001737	4235439306498
manu	43944000000	1.944.97000	+30034800040	41300028300414	39	415048014090	sorroneech	*>**************	4,000,000,000,000,000	epicocenes	4.00949990381	41/3429002900	***************************************	13002204900	4.00000034043	***************************************
Takes	10000004400	+19679600043	0.208038490700	PORTMAGOCCO	*********	10	***************************************	cocenerosecen	133808231400	113040035040	9.90000000000	***************************************	4.86125020000	4,94136,9036,91	+20000PEG346	4300304043400
terror	5106H000KTH4.	0000000000	+90,0079800340	4,00000000000	CHESTOSIONEN	434099003900	14	4190704079041	POWDOWANCESS	+070MD/M000F	4.1208/00000040	ASPROVAGEDED	**********	NEXMEDICARIA	HERENTODA	***************************************
Techni	HAMMENO	1.000000000000	+11340000011	40004000	430088790707	1-OCKH K TRROGER	1,00704070000	39	130037346003	4,0000000000000000000000000000000000000	13903030000	141400100MI	0060333961	sepumente	+0.21112000000	*HETHATAMBETIA
404	33390004040	1.00000000000		resenence	+00000000000000000000000000000000000000	13800331000	a monoments	4.09/03/5490003	54	<.pre>	142001441300	4,9007158890	<	434000009191	+3600000000	420704040000
ON	120234042544	130000000000	10000434004	12850000000	*29020049995	329046823040	осточения	4.0900460041	139814402000	10	1045/42063000	***************************************	ettioonicoess	4.9434900238	+04230000234	421465404530
MIC	32/29000000	<	***************************************	кунскихмине.	*2019/5/88/000	334800000CC	+32,000,000,000	4.04%(30,00000)	samoreatime	CM74C000000	19	100710000100	41343703943908	4.047090004	+0957707300	40000000000
Nagri.	4382000000	************	0.004/10.00367398	107300000074	************	1000730733174	1940/2004	410/00000004	4.900173388340	4,014,0042,012,00	3-004-94-000-00-0	54	+CDENT/HEME	470073903009	+0713900000	***************************************
Maria	13200000000	130390590531	(3045)07(300	4303750404	************	10013EXX000F		0000323940	HARITAGA	ETEMORREMON	536043649604	4/00043/0000	39	4.0000000000000000000000000000000000000	+00119000001	***************************************
ol	4,946(4147))	630040909040	4:36360000988	4.00000000000	CERCECHONON	4,047,90,000,000	130300000	4.00.00000000	414650043434	+04040686679	41365000000	4//37970484	***************************************	и	RECEIVAN	**********
-01	434444604	KEDOLANGOOD	4:340000000	4100940020	412042000244001	4.20888440040	468904000M	+00777304048	4180300404001	+04230000294	4.994178.543000	4.07139400900	+CETWOONTE.	10023040400	14	***************************************
01	41600000000	127741002000	4:204400000EM	4172/00088944	CHACKMACCIAL	4,300044043494	1000000000	OCCUSSION	4.039436638	***************************************	43030034090	4.0004047333	4.04347.6204000	1004/3351910	EM-44 04K3K3K2	19

Measures pairwise Pearson correlations between numeric features and final grade.

Grade by Sex

sex	count	mean
F	208	9.966346153846152
M	187	10.914438502673796

Shows the distribution of final grades split by student sex.

Grade by Studytime

studytime	count	mean
1.0	105.0	10.047619047619047
2.0	198.0	10.171717171717171
3.0	65.0	11.4
4.0	27.0	11.25925925925926

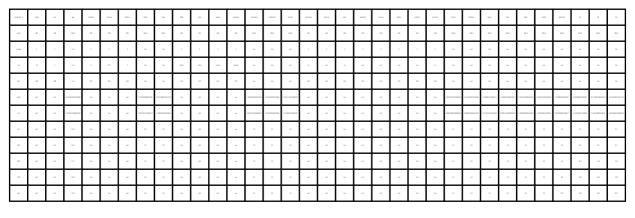
model	fold	rmse	mae	r2
full	1	1.8856616875781296	1.029	0.856912676056338
mean	1	4.985870533735388	3.7797183098591542	-0.0003583492624064
ols_g1_g2	1 Noc	ed. ₂₃₆₀ / ₉₇ / ₄₉ etr	1.1796718665594783	0.8213040742253821
last_grade			1.05	0.7987927565392354
no_g1_g2	1	4.126523960914319	3.071	0.3147605633802817
no_behavior	1	2.160979330603966	1.239236723202134	0.812079208559454
demographic_only	1	4.934559719935637	3.817142478821309	0.0201255682248986
full	2	1.9441265074097835	1.1452228211262578	0.8715613668570772
mean	2	5.4610421671398495	4.373943661971831	-0.0134391827807156
ols_g1_g2	2	2.474060913611427	1.4155515431189034	0.7919980492987916
last_grade	2	2.683281572999748	1.4	0.7553308979695863
no_g1_g2	2	5.172203592280567	3.9775	0.0909288930422225
no_behavior	2	2.460185893355847	1.4349821093849593	0.7943245389561768
demographic_only	2	5.789232964932414	4.77799561252406	-0.1389081071195361
full	3	2.0940893008656527	1.3295	0.8459133413857473
mean	3	5.603236004265757	4.251619718309859	-0.103195474935767
ols_g1_g2	3	2.600963269698076	1.5117084887614038	0.7622923929173249
last_grade	3	2.7658633371878665	1.35	0.7311957834632701
no_g1_g2	3	4.395010807722775	3.3	0.3212739211595475
no_behavior	3	2.7999784351074712	1.8102119821981384	0.7245238436519816
demographic_only	3	5.577924524630135	4.175352954033437	-0.093251064103492
full	4	1.2264428163579122	0.8409611311034496	0.8991130089761692
mean	4	3.895013444927175	2.979647887323944	-0.0175563855737386
ols_g1_g2	4	1.0720179624138777	0.8632484754383369	0.9229194710215552
last_grade	4	0.85146931829632	0.575	0.9513728778033956
no_g1_g2	4	3.461228105745126	2.6710000000000003	0.1964720184447705
no_behavior	4	1.1576803782220526	0.8149465126528493	0.9101086492143128
demographic_only full	<u>4</u> 5	3.955474882816763 1.588146718662983	2.947551573622983 0.9855	-0.0493921809998263
	5	3.689792210173238	2.7390140845070423	0.8135494363333949
mean	5	1.676939871218497	1.113593050699056	0.7921177355991639
ols_g1_g2 last grade	5	1.5572411502397436	0.825	0.8207355387174274
no g1 g2	5	3.8181295962903294	2.619411540286774	-0.0776650241410576
no behavior	5	2.0261066681265225	1.3346509732308818	0.6965360760948616
demographic only	5	3.61819482942684	2.7845095446603816	0.0322429256188417
full	6	1.407986383844558	1.040957416958017	0.8979673313333636
mean	6	4.526538664085158	3.1201382886776146	-0.0545685237551902
ols_g1_g2	6	2.0877454210553146	1.3729689776742404	0.7756648039214931
last grade	6	2.087815690853567	1.0256410256410255	0.7756497022198159
no_g1_g2	6	3.5005044874724205	2.6041514108397688	0.3693279079174019
no behavior	6	2.042928858978009	1.2215061810506218	0.7851928055953055
demographic only	6	4.202669476313422	3.0927754362403115	0.0909394580409223
full	7	1.694941368333521	0.9559776913257768	0.7860781007433507
mean	7	3.9825453113663993	3.14253817343705	-0.1810474270992146
ols_g1_g2	7	1.804282976132336	0.9004738735975341	0.7575874001195231
last_grade	7	1.8257418583505536	0.7692307692307693	0.7517869382159992
no_g1_g2	7	3.4581572089844737	2.804102564102564	0.109497072358758
no_behavior	7	1.895279762631226	0.9855817566813952	0.732519246993506
demographic_only	7	3.9734839694442674	3.27858558223749	-0.1756791518216933
full	8	1.7771916768908906	1.0210256410256409	0.8350974186461623
mean	8	4.383603212549194	3.288893690579084	-0.0032782235079613
ols_g1_g2	8	1.9088602809485489	1.1398186888546955	0.8097576528460009
last_grade	8	1.9546132150665565	1.0	0.8005286283125086
no_g1_g2	8	3.8734637988909815	2.8394486012281672	0.2166462700876653
no_behavior	8	2.032556924122111	1.2525112995562877	0.7843028794679103
demographic_only	8	4.641494980885736	3.3728052747694317	-0.1247983823695786
full	9	0.898514669226244	0.6612019177482549	0.9574457022092726
mean	9	4.412465240586416	3.312806107749928	-0.0262559290463699
ols_g1_g2	9	1.2892182192517176	0.8653262313857206	0.9123915587319892
last_grade	9	1.3397282541141673	0.666666666666666	0.90539229276407
no_g1_g2	9	3.6047580954861305	2.771675566586973	0.3150713442637364
no_behavior	9	1.3424225167803794	0.9039702691094637	0.9050113881749656
demographic_only	9	4.239902701625077	3.236394843997611	0.0524440444907249
full	10	1.3966406582242723	0.9589743589743592	0.9044178350515464
mean	10	4.55610168793904	3.485378853356381	-0.0171718170318655
ols_g1_g2 Cros	s-validated perforr	nan∉⊛4ma⊛tr⊫essorft	ne predictivemode	0.8285710586422113
last_grade	10	1.9806758753205744	0.9487179487179488	0.807764175257732
no_g1_g2	10	4.326059435308785	3.221252913882972	0.0829511613488869
no_behavior	10	2.107931419352348	1.273310913742115	0.7822689054355105
demographic_only	10	4.61036578087773	3.5543230957084107	-0.0415455501139092

Statistical Tests

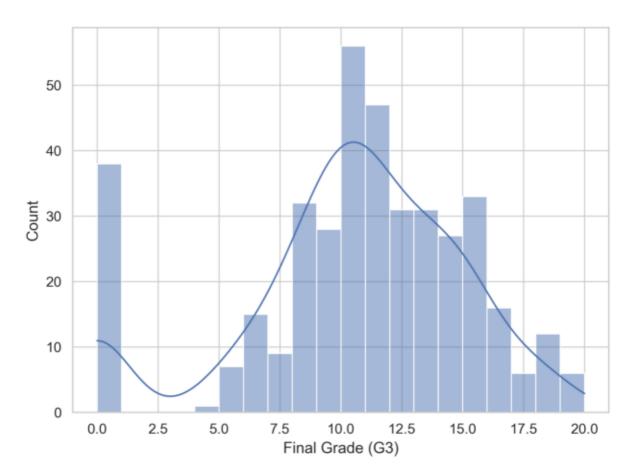
model	test	p_value	effect_size	
mean	paired_t	2.177265713379969e-08	-5.726265006838581	
ols_g1_g2	paired_t	0.0053447198940307	-1.1531940983737576	
last_grade	paired_t	0.0162208454915743	-0.9328729275599432	
no_g1_g2	paired_t	3.540067666836518e-08	-5.417492574148331	
no_behavior	paired_t	0.0005449295886842	-1.652560012591248	
demographic_only	paired_t	3.553686885211942e-08	-5.41511745161214	

P-values and statistics from hypothesis tests on key features.

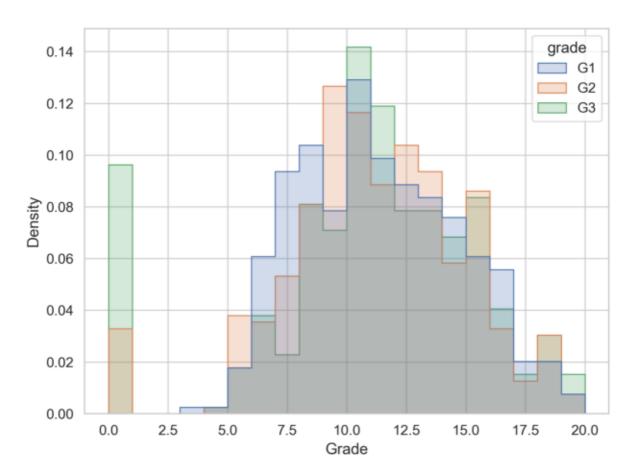
Summary



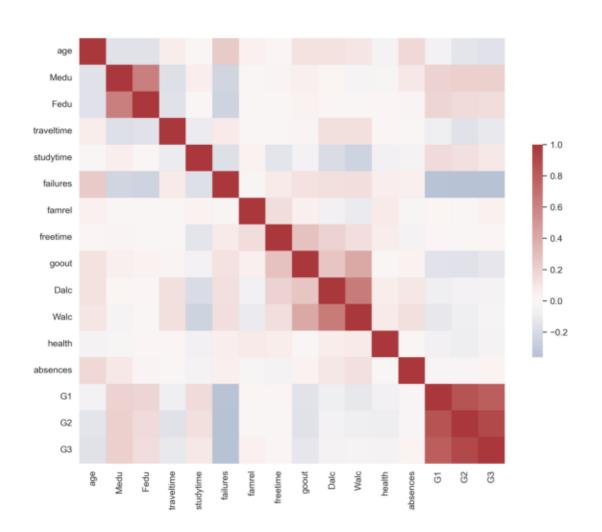
G3 Distribution



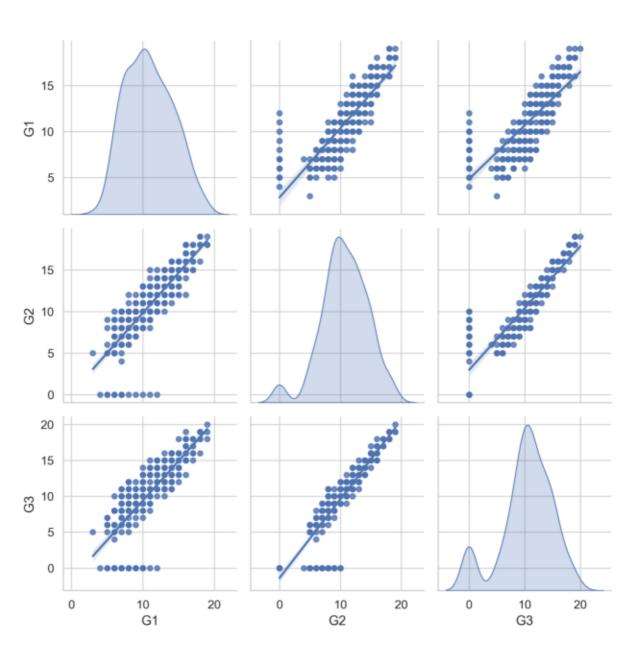
Grades Distribution



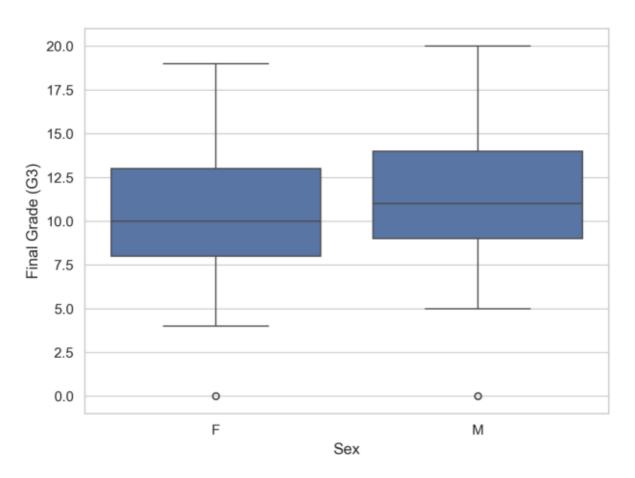
Correlation Heatmap



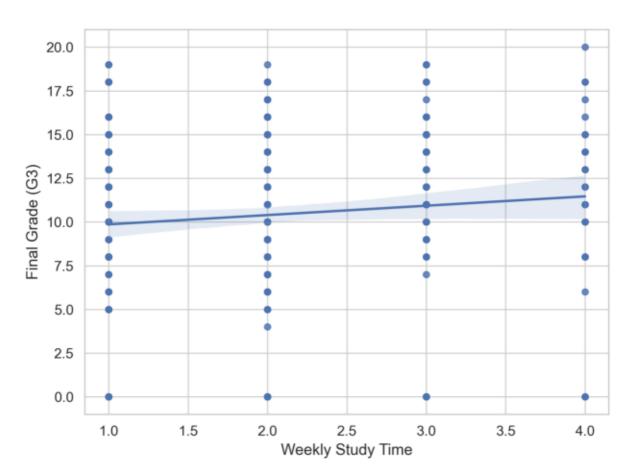
Grades Pairplot



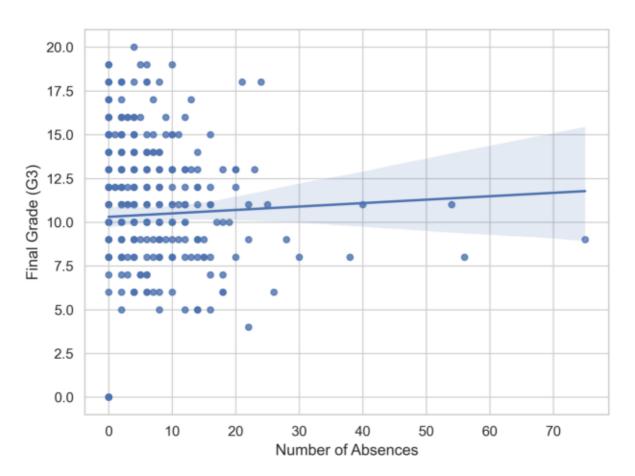
G3 by Sex



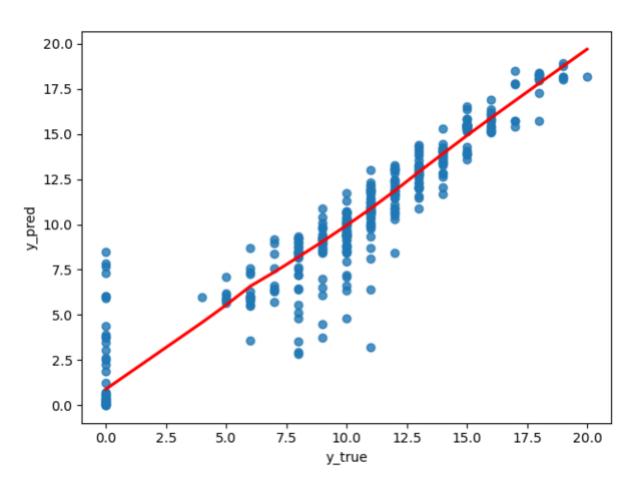
Studytime vs G3



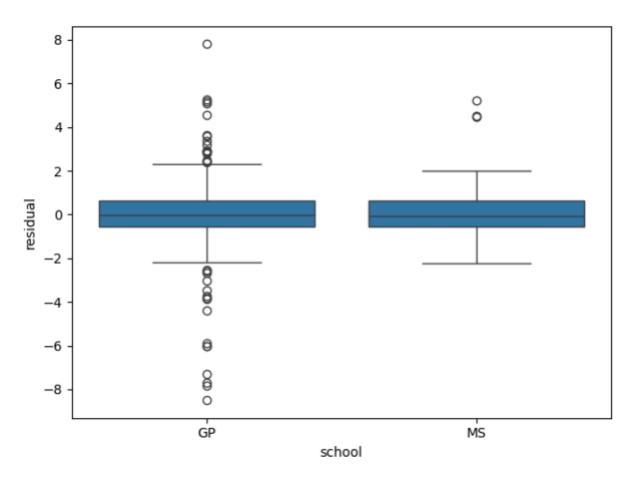
Absences vs G3



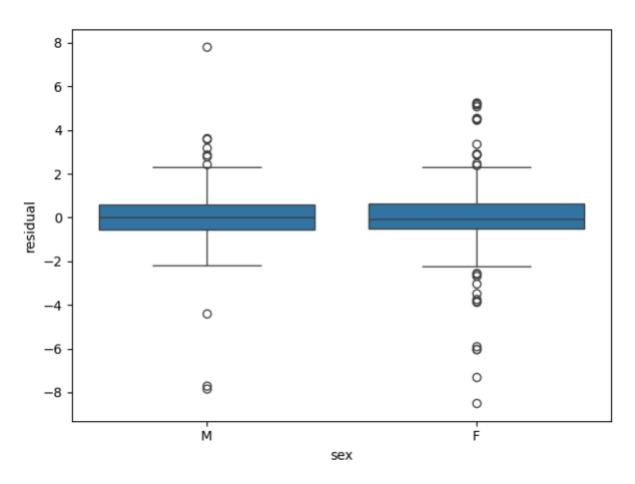
Predicted vs Actual



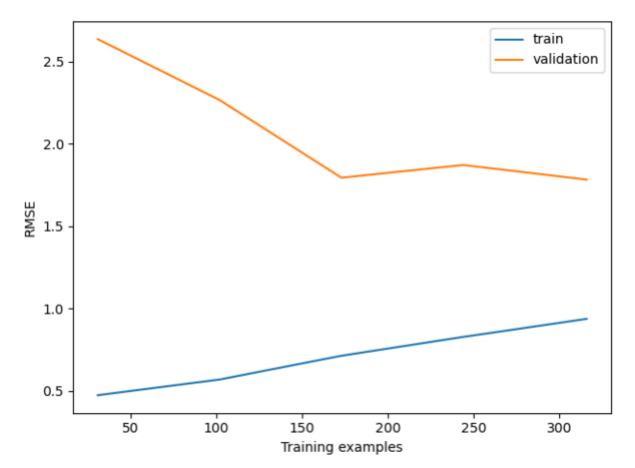
Residuals by School



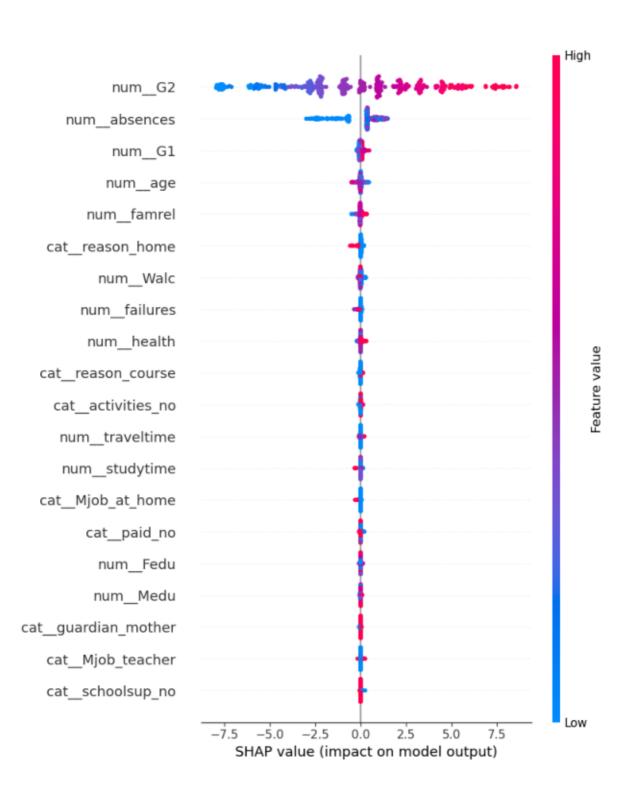
Residuals by Sex



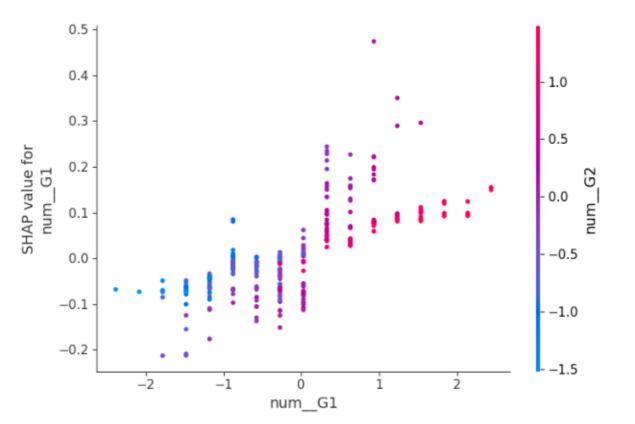
Learning Curve



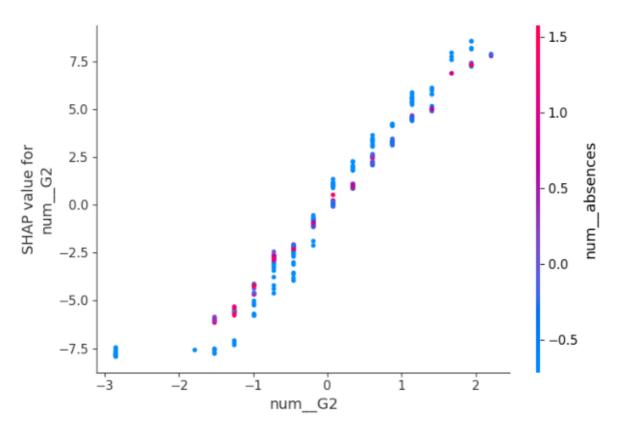
SHAP Summary



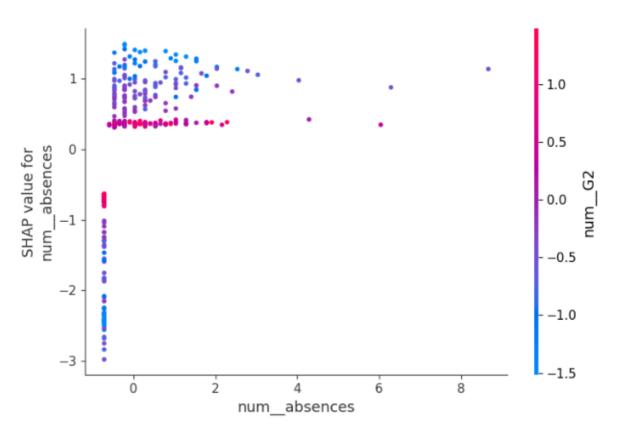
SHAP Dependence - G1



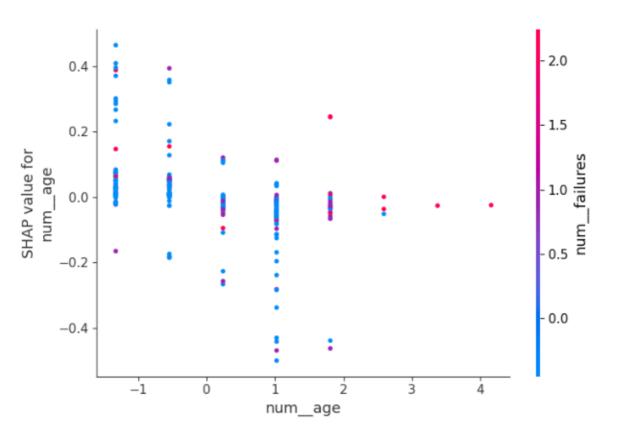
SHAP Dependence - G2



SHAP Dependence - Absences



SHAP Dependence - Age



SHAP Dependence - FamRel

