

Computer

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- i I expect the sat to have a positive impact on colgpa, hspers to have negative impact but for hsize, female and athlete are ambiguous

ii

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. do "C:\Users\610464-1\AppData\Local\Temp\STD11b8_000000.tmp"
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. regress colgpa hsize hsizeq hspers sat female athlete
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Source	SS	df	MS	Number of obs	=	4,137
Model	524.819305	6	87.4698842	F(6, 4130)	=	284.59
Residual	1269.37637	4,130	.307355053	Prob > F	=	0.0000
				R-squared	=	0.2925
				Adj R-squared	=	0.2915
Total	1794.19567	4,136	.433799728	Root MSE	=	.5544

colgpa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
hsize	-.0568543	.0163513	-3.48	0.001	-.0889117 -.0247968
hsizeq	.0046754	.0022494	2.08	0.038	.0002654 .0090854
hspers	-.0132126	.0005728	-23.07	0.000	-.0143355 -.0120896
sat	.0016464	.0000668	24.64	0.000	.0015154 .0017774
female	.1548814	.0180047	8.60	0.000	.1195826 .1901802
athlete	.1693064	.0423492	4.00	0.000	.0862791 .2523336
_cons	1.241365	.0794923	15.62	0.000	1.085517 1.397212

- The colgpa of athlete is expected to get higher by .1693 than the non-athlete person
- $|t| > 1.96$, so being athlete has statistically impact on colgpa

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. regress colgpa hsize hsizeq hspers female athlete
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Source	SS	df	MS	Number of obs	=	4,137
Model	338.217123	5	67.6434247	F(5, 4131)	=	191.92
Residual	1455.97855	4,131	.35245184	Prob > F	=	0.0000
				R-squared	=	0.1885
				Adj R-squared	=	0.1875
Total	1794.19567	4,136	.433799728	Root MSE	=	.59368

colgpa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
hsize	-.0534038	.0175092	-3.05	0.002	-.0877313 -.0190763
hsizeq	.0053228	.0024086	2.21	0.027	.0006007 .010045
hspers	-.0171365	.0005892	-29.09	0.000	-.0182916 -.0159814
female	.0581231	.0188162	3.09	0.002	.0212333 .095013
athlete	.0054487	.0447871	0.12	0.903	-.0823582 .0932556
_cons	3.047698	.0329148	92.59	0.000	2.983167 3.112229

- Dropping the sat makes the colgpa of athlete to be 0.00545. Also, the different in expected colgpa of athlete and non-athlete is 0.00545.
- $|t| < 1.96$, so in this case, being athlete has no statistically impact on colgpa

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. gen male = female==0
. gen non_ath = athlete==0
. gen fem_ath = female*athlete
. gen male_ath = male*athlete
. gen male_non_ath = male*non_ath
. regress colgpa hsize hsizeq hspcr sat fem_ath male_ath male_non_ath

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Source	SS	df	MS	Number of obs	=	4,137
Model	524.821272	7	74.9744674	F(7, 4129)	=	243.88
Residual	1269.3744	4,129	.307429015	Prob > F	=	0.0000
				R-squared	=	0.2925
				Adj R-squared	=	0.2913
				Root MSE	=	.55446
Total	1794.19567	4,136	.433799728			

colgpa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
hsize	-.0568006	.0163671	-3.47	0.001	-.0888889 -.0247124
hsizeq	.0046699	.0022507	2.07	0.038	.0002573 .0090825
hspcr	-.0132114	.000573	-23.06	0.000	-.0143349 -.012088
sat	.0016462	.0000669	24.62	0.000	.0015151 .0017773
fem_ath	.1751106	.0840258	2.08	0.037	.0103748 .3398464
male_ath	-.0128034	.0487395	0.26	0.793	-.0827523 .1083591
male_non_ath	-.1546151	.0183122	-8.44	0.000	-.1905168 -.1187133
_cons	1.39619	.0755581	18.48	0.000	1.248055 1.544324

Since the coefficient of fem_ath is 0.175, it can be interpreted that a female athlete tends to have higher colgpa by 0.175 compared with the colgpa of non-athlete female. Also, $|t| > 1.96$, we reject that there is no difference in colgpa for female athlete and non-female athlete.

v

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. gen fem_sat = female*sat

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Source	SS	df	MS	Number of obs	=	4,137
Model	524.867644	7	74.981092	F(7, 4129)	=	243.91
Residual	1269.32803	4,129	.307417784	Prob > F	=	0.0000
				R-squared	=	0.2925
				Adj R-squared	=	0.2913
				Root MSE	=	.55445
Total	1794.19567	4,136	.433799728			

colgpa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
hsize	-.0569121	.0163537	-3.48	0.001	-.0889741 -.0248501
hsizeq	.0046864	.0022498	2.08	0.037	.0002757 .0090972
hspcr	-.013225	.0005737	-23.05	0.000	-.0143497 -.0121003
sat	.0016255	.0000852	19.09	0.000	.0014585 .0017924
female	.1023066	.1338023	0.76	0.445	-.1600179 .3646311
athlete	.1677568	.0425334	3.94	0.000	.0843684 .2511452
fem_sat	.00000512	.0001291	0.40	0.692	-.000202 .0003044
_cons	1.263743	.0974952	12.96	0.000	1.0726 1.454887

There is only little evidence the effect of sat on colgpa is differ by gender since the coefficients of fem_sat is only 0.00000512 and $|t| < 1.96$.