

Host

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Hurdle Model

Hurdle Model
Import data

Hurdle Model Variable Preparation

Hurdle Model Variable Preparation

Create count outcome, hurdle flag, and predictor dummies

Hurdle Model Prepared Data Summary

Hurdle Model Prepared Data Summary
Count outcome, zero hurdle, positive counts, and predictors

Frequencies

[HurdleModelData] D:\DATA ANALYSIS\H Regression Tests and Models\Hurdle Model\SPSS_Output\sav\Hurdle-Model-data.sav

Statistics

		Hurdle binary part: 1 = positive count, 0 = zero count	School dummy: 1 = MS, 0 = GP	Sex dummy: 1 = male, 0 = female	Address dummy: 1 = urban, 0 = rural	Higher education intention dummy: yes
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0

Statistics

		Internet access dummy: yes	School support dummy: yes	Family support dummy: yes	Activities dummy: yes
N	Valid	649	649	649	649
	Missing	0	0	0	0

Frequency Table

Hurdle binary part: 1 = positive count, 0 = zero count

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero count	244	37.6	37.6	37.6
	Positive count	405	62.4	62.4	100.0
	Total	649	100.0	100.0	

School dummy: 1 = MS, 0 = GP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	423	65.2	65.2	65.2
	Yes / target	226	34.8	34.8	100.0
	Total	649	100.0	100.0	

Hurdle Model Prepared Data Summary
Count outcome, zero hurdle, positive counts, and predictors

Sex dummy: 1 = male, 0 = female

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	383	59.0	59.0	59.0
	Yes / target	266	41.0	41.0	100.0
	Total	649	100.0	100.0	

Address dummy: 1 = urban, 0 = rural

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	197	30.4	30.4	30.4
	Yes / target	452	69.6	69.6	100.0
	Total	649	100.0	100.0	

Higher education intention dummy: yes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	69	10.6	10.6	10.6
	Yes / target	580	89.4	89.4	100.0
	Total	649	100.0	100.0	

Internet access dummy: yes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	151	23.3	23.3	23.3
	Yes / target	498	76.7	76.7	100.0
	Total	649	100.0	100.0	

School support dummy: yes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	581	89.5	89.5	89.5
	Yes / target	68	10.5	10.5	100.0
	Total	649	100.0	100.0	

Hurdle Model Prepared Data Summary
Count outcome, zero hurdle, positive counts, and predictors

Family support dummy: yes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	251	38.7	38.7	38.7
	Yes / target	398	61.3	61.3	100.0
	Total	649	100.0	100.0	

Activities dummy: yes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No / reference	334	51.5	51.5	51.5
	Yes / target	315	48.5	48.5	100.0
	Total	649	100.0	100.0	

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Hurdle model count outcome: rounded absences clipped at zero	649	0	32	3.66	4.641
Natural log of positive count, positive observations only	405	.000	3.466	1.50556	.724721
School absences	649	.000	32.000	3.65948	4.640759
First period grade	649	.000	19.000	11.39908	2.745265
Second period grade	649	.000	19.000	11.57011	2.913639
Final grade	649	.000	19.000	11.90601	3.230656
Weekly study time group	649	1	4	1.93	.830
Number of past class failures	649	0	3	.22	.593
age	649	15.000	22.000	16.74422	1.218138
Medu	649	0	4	2.51	1.135
Fedu	649	0	4	2.31	1.100
traveltime	649	1	4	1.57	.749

Hurdle Model Prepared Data Summary
Count outcome, zero hurdle, positive counts, and predictors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
health	649	1	5	3.54	1.446
Valid N (listwise)	405				

Hurdle Count Outcome Distribution

Hurdle Count Outcome Distribution
Distribution of the rounded count outcome by hurdle status

Explore

Hurdle binary part: 1 = positive count, 0 = zero count

Case Processing Summary

		Cases			
Hurdle binary part: 1 = positive count, 0 = zero count		Valid		Missing	
		N	Percent	N	Percent
Hurdle model count outcome: rounded absences clipped at zero	Zero count	244	100.0%	0	0.0%
	Positive count	405	100.0%	0	0.0%

Case Processing Summary

		Cases	
Hurdle binary part: 1 = positive count, 0 = zero count		Total	
		N	Percent
Hurdle model count outcome: rounded absences clipped at zero	Zero count	244	100.0%
	Positive count	405	100.0%

Hurdle Count Outcome Distribution
Distribution of the rounded count outcome by hurdle status

Descriptives

Hurdle binary part: 1 = positive count, 0 = zero count		Statistic
Hurdle model count outcome: rounded absences clipped at zero	Zero count	Mean
		.00
		95% Confidence Interval for Mean
		Lower Bound
		.00
		Upper Bound
		.00
		5% Trimmed Mean
		.00
		Median
		.00
		Variance
		.000
		Std. Deviation
		.000
		Minimum
		0
		Maximum
		0
		Range
		0
		Interquartile Range
		0
		Skewness
		.
		Kurtosis
		.
	Positive count	Mean
		5.86
		95% Confidence Interval for Mean
		Lower Bound
		5.41
		Upper Bound
		6.32
		5% Trimmed Mean
		5.34
		Median
		4.00
		Variance
		21.583
		Std. Deviation
		4.646
		Minimum
		1
		Maximum
		32
		Range
		31
		Interquartile Range
		6
		Skewness
		1.995
		Kurtosis
		5.619

Hurdle Count Outcome Distribution
Distribution of the rounded count outcome by hurdle status

Descriptives

Hurdle binary part: 1 = positive count, 0 = zero count			Std. Error
Hurdle model count outcome: rounded absences clipped at zero	Zero count	Mean	.000
		95% Confidence Interval for Mean	Lower Bound
			Upper Bound
		5% Trimmed Mean	
		Median	
		Variance	
		Std. Deviation	
		Minimum	
		Maximum	
		Range	
		Interquartile Range	
		Skewness	.
		Kurtosis	.
	Positive count	Mean	.231
		95% Confidence Interval for Mean	Lower Bound
			Upper Bound
		5% Trimmed Mean	
		Median	
		Variance	
		Std. Deviation	
		Minimum	
		Maximum	
		Range	
		Interquartile Range	
		Skewness	.121
		Kurtosis	.242

Hurdle Count Outcome Distribution

Distribution of the rounded count outcome by hurdle status

Tests of Normality

		Kolmogorov-Smirnov ^a			Shapiro-...
		Statistic	df	Sig.	Statistic
Hurdle model count outcome: rounded absences clipped at zero	Zero count	.	244	.	.
	Positive count	.204	405	.000	.801

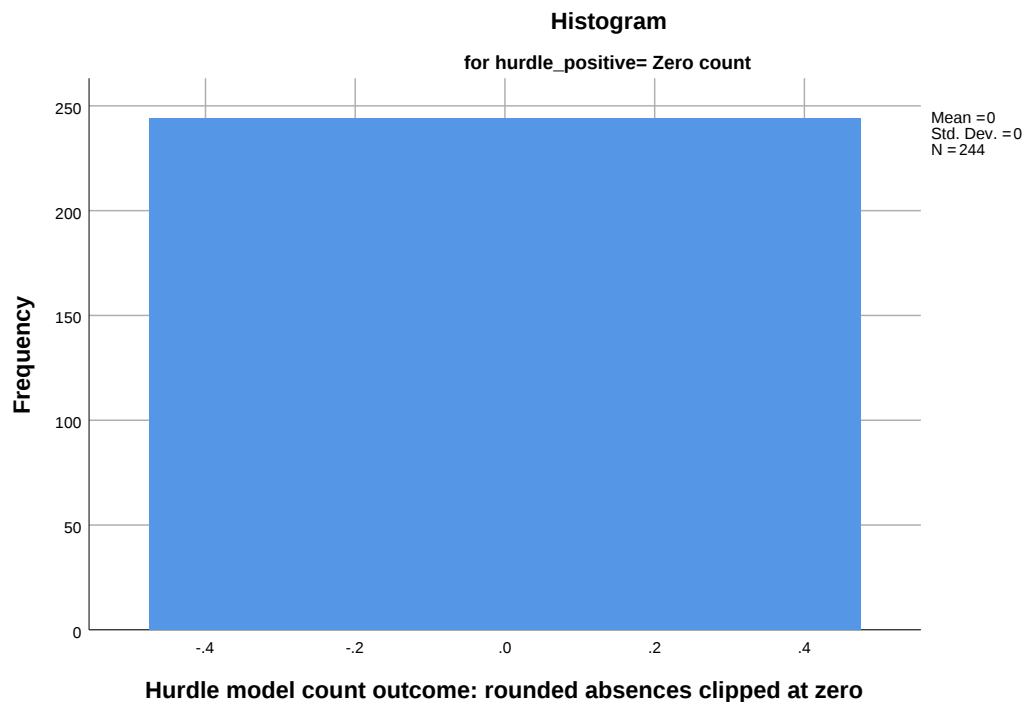
Tests of Normality

		Shapiro-Wilk	
		df	Sig.
Hurdle model count outcome: rounded absences clipped at zero	Zero count	244	.
	Positive count	405	.000

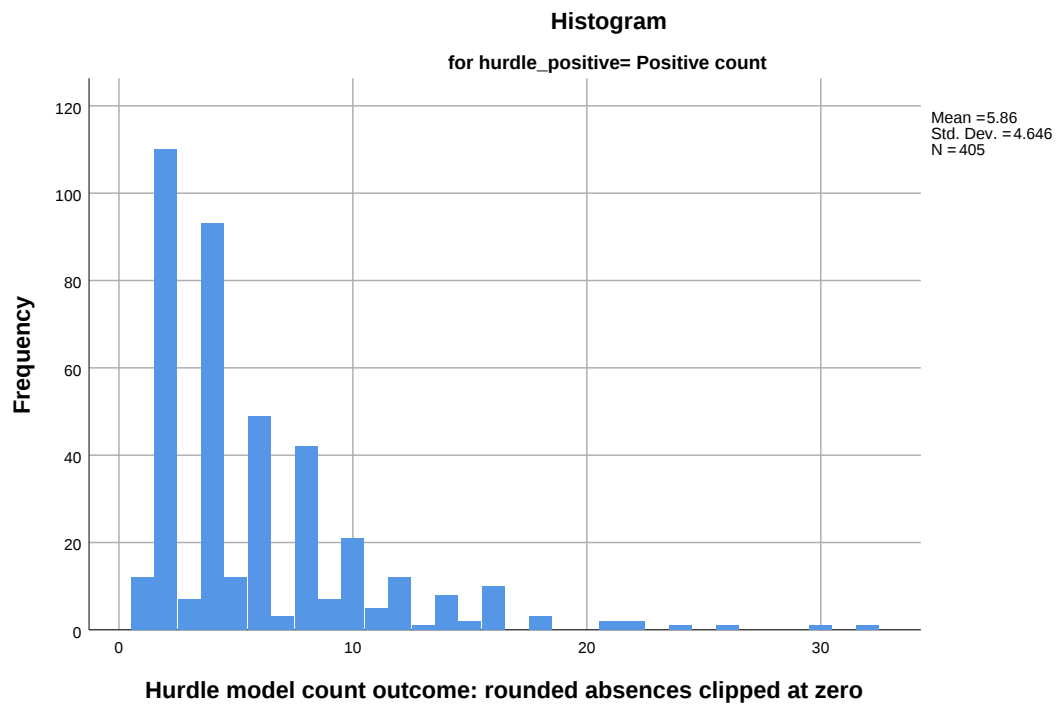
a. Lilliefors Significance Correction

Hurdle model count outcome: rounded absences clipped at zero

Histograms

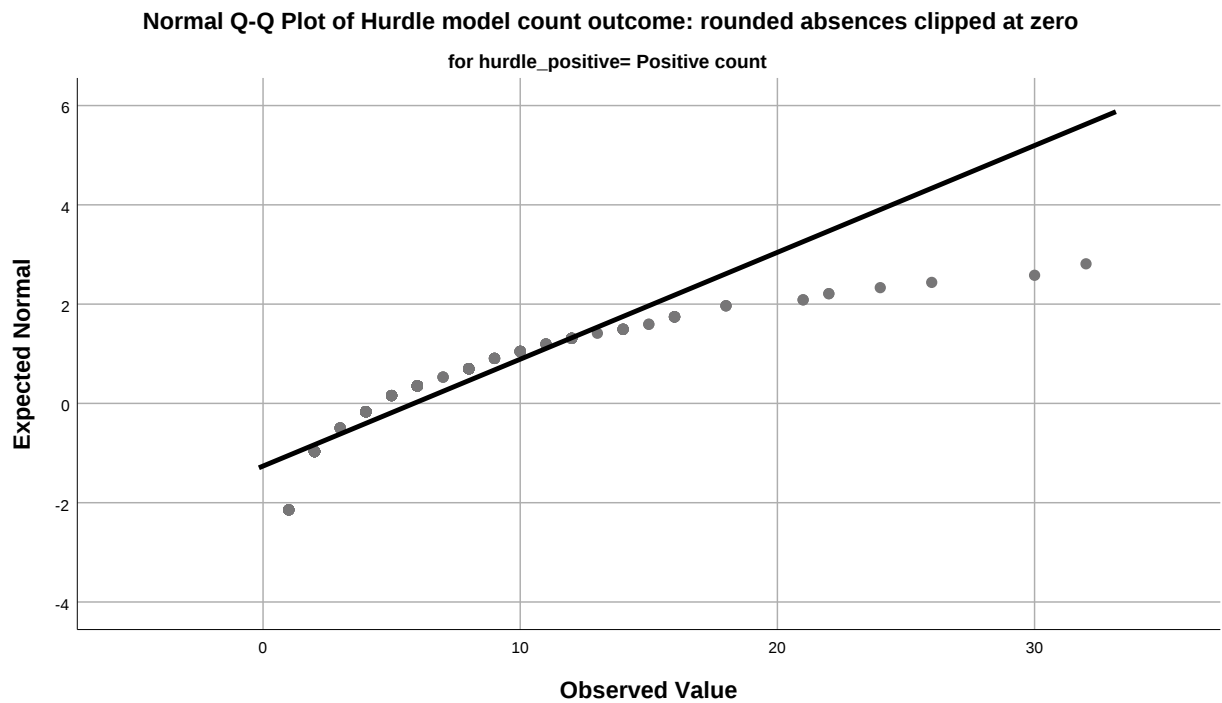
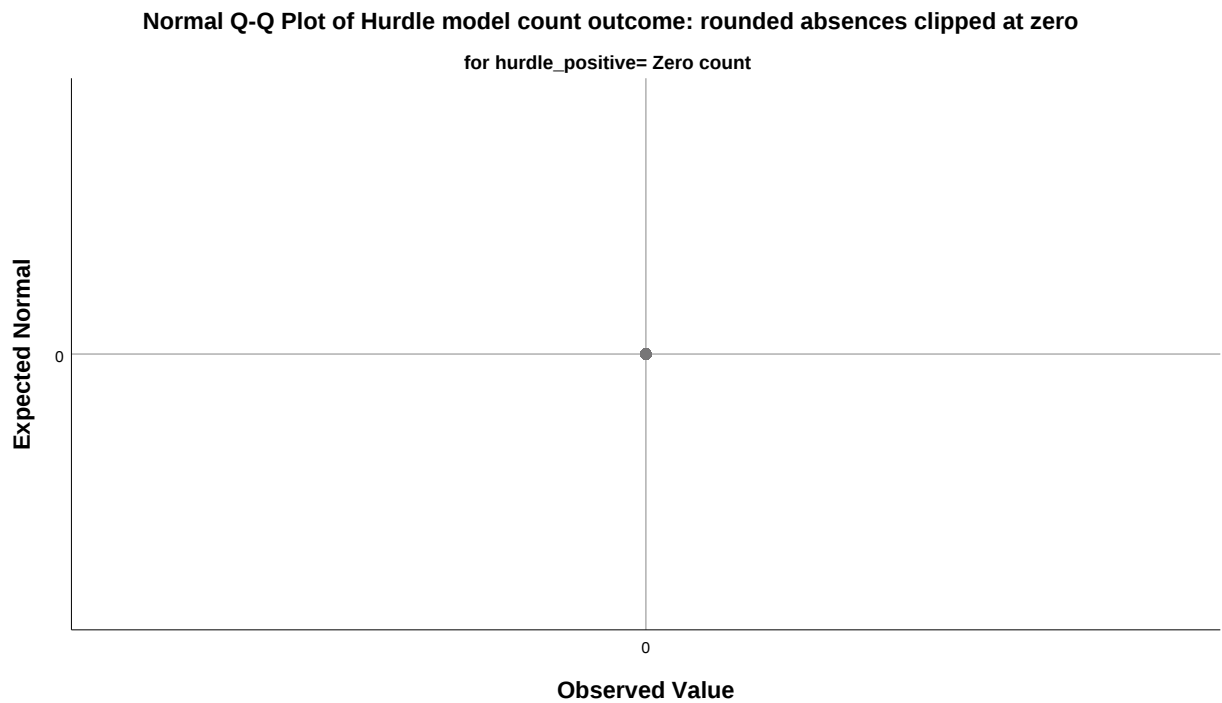


Hurdle Count Outcome Distribution
Distribution of the rounded count outcome by hurdle status



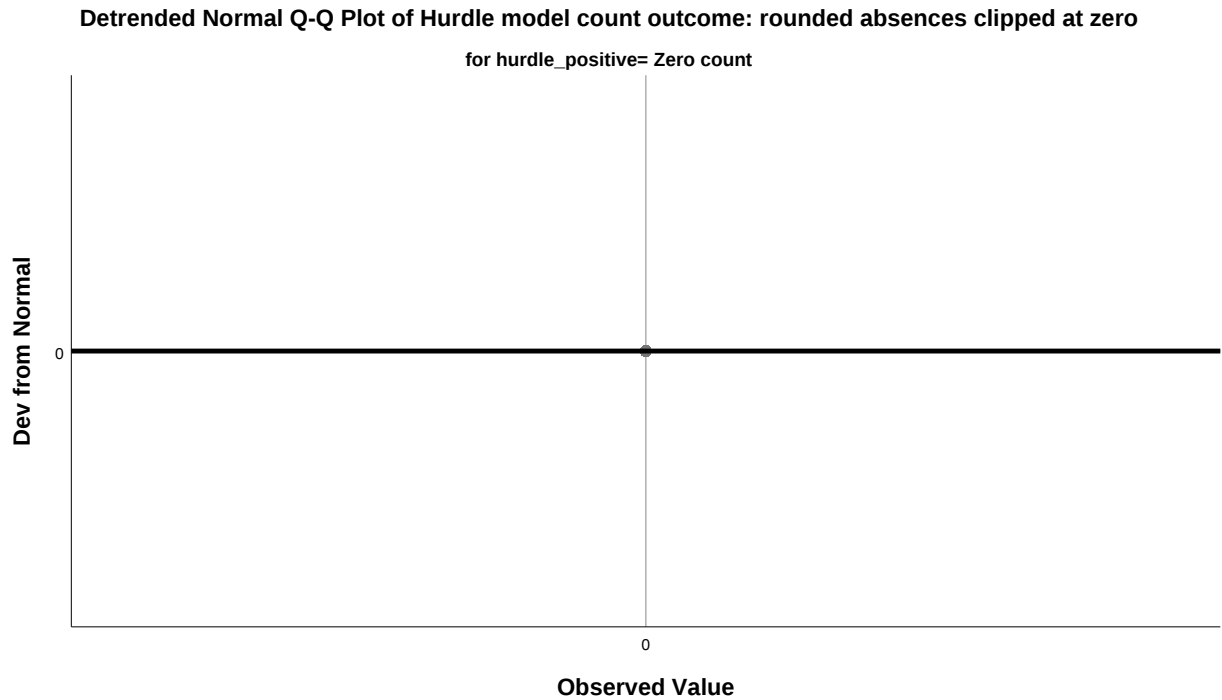
Normal Q-Q Plots

Hurdle Count Outcome Distribution
Distribution of the rounded count outcome by hurdle status



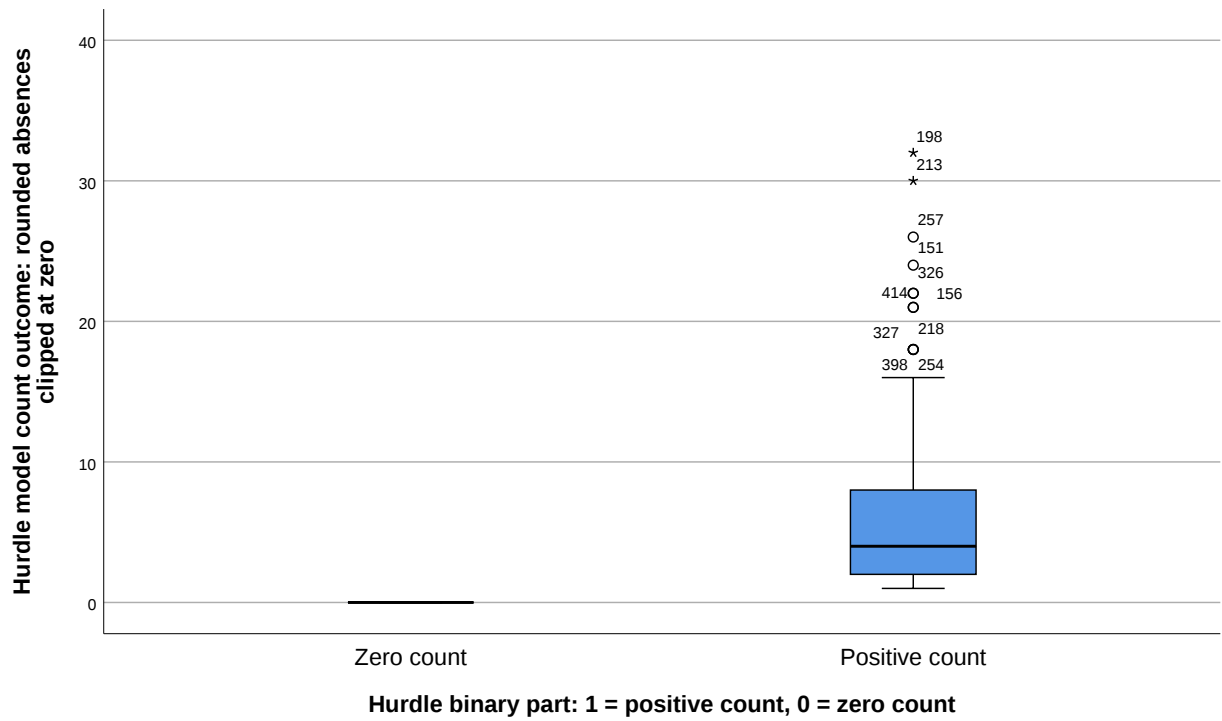
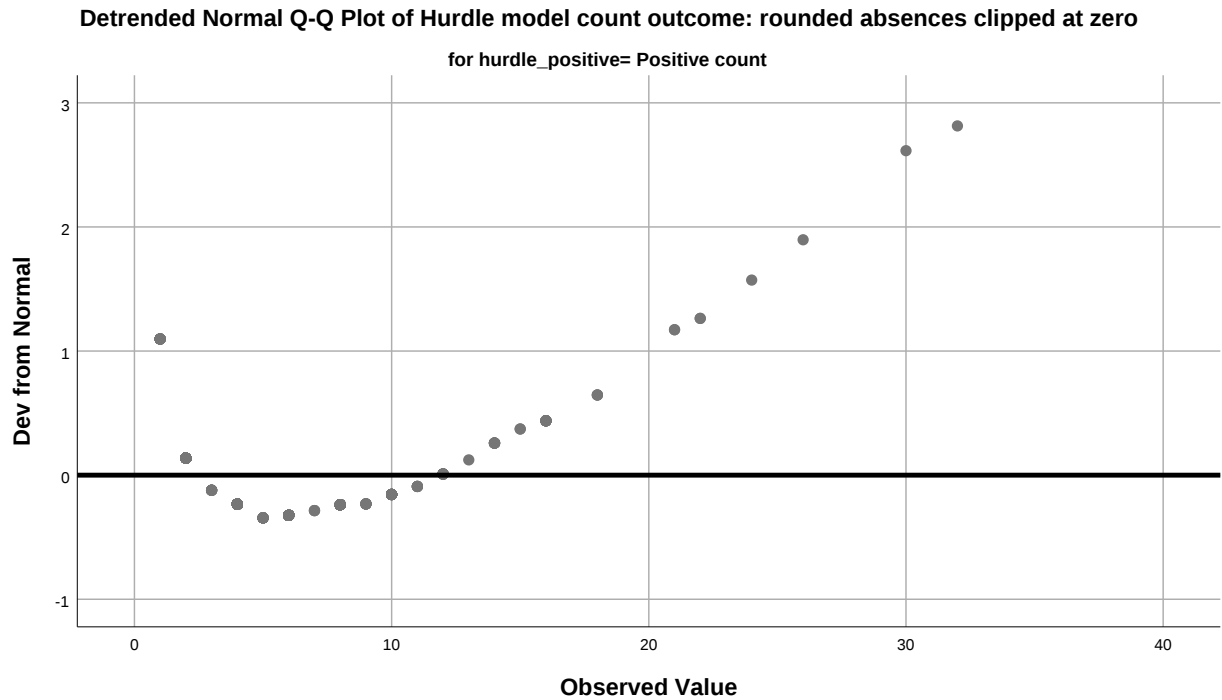
Hurdle Count Outcome Distribution
Distribution of the rounded count outcome by hurdle status

Detrended Normal Q-Q Plots



Hurdle Count Outcome Distribution

Distribution of the rounded count outcome by hurdle status



Zero and Positive Count Context

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstabs

Case Processing Summary

	Valid		Cases Missing		Total	
	N	Percent	N	Percent	N	Percent
Hurdle binary part: 1 = positive count, 0 = zero count * School dummy: 1 = MS, 0 = GP	649	100.0%	0	0.0%	649	100.0%
Hurdle binary part: 1 = positive count, 0 = zero count * Sex dummy: 1 = male, 0 = female	649	100.0%	0	0.0%	649	100.0%
Hurdle binary part: 1 = positive count, 0 = zero count * Address dummy: 1 = urban, 0 = rural	649	100.0%	0	0.0%	649	100.0%
Hurdle binary part: 1 = positive count, 0 = zero count * Higher education intention dummy: yes	649	100.0%	0	0.0%	649	100.0%
Hurdle binary part: 1 = positive count, 0 = zero count * Internet access dummy: yes	649	100.0%	0	0.0%	649	100.0%

**Hurdle binary part: 1 = positive count, 0 = zero count * School dummy:
1 = MS, 0 = GP**

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstab

			School dummy: 1 = MS, 0 = GP	
			No / reference	Yes / target
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	146	98
		% within Hurdle binary part: 1 = positive count, 0 = zero count	59.8%	40.2%
		% within School dummy: 1 = MS, 0 = GP	34.5%	43.4%
	Positive count	Count	277	128
		% within Hurdle binary part: 1 = positive count, 0 = zero count	68.4%	31.6%
		% within School dummy: 1 = MS, 0 = GP	65.5%	56.6%
Total	Count		423	226
	% within Hurdle binary part: 1 = positive count, 0 = zero count		65.2%	34.8%
	% within School dummy: 1 = MS, 0 = GP		100.0%	100.0%

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstab

			Total
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	244
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within School dummy: 1 = MS, 0 = GP	37.6%
	Positive count	Count	405
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within School dummy: 1 = MS, 0 = GP	62.4%
Total	Count		649
	% within Hurdle binary part: 1 = positive count, 0 = zero count		100.0%
	% within School dummy: 1 = MS, 0 = GP		100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.915 ^a	1	.027		
Continuity Correction ^b	4.545	1	.033		
Likelihood Ratio	4.879	1	.027		
Fisher's Exact Test				.027	.017
Linear-by-Linear Association	4.907	1	.027		
N of Valid Cases	649				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 84.97.

b. Computed only for a 2x2 table

Zero and Positive Count Context
Hurdle split by categorical predictors

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-.087	.027
	Cramer's V	.087	.027
N of Valid Cases		649	

Hurdle binary part: 1 = positive count, 0 = zero count * Sex dummy: 1 = male, 0 = female

Crosstab

			Sex dummy: 1 = male, 0 = female	
			No / reference	Yes / target
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	142	102
		% within Hurdle binary part: 1 = positive count, 0 = zero count	58.2%	41.8%
		% within Sex dummy: 1 = male, 0 = female	37.1%	38.3%
	Positive count	Count	241	164
		% within Hurdle binary part: 1 = positive count, 0 = zero count	59.5%	40.5%
		% within Sex dummy: 1 = male, 0 = female	62.9%	61.7%
Total	Count		383	266
	% within Hurdle binary part: 1 = positive count, 0 = zero count		59.0%	41.0%
	% within Sex dummy: 1 = male, 0 = female		100.0%	100.0%

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstab

			Total
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	244
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Sex dummy: 1 = male, 0 = female	37.6%
	Positive count	Count	405
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Sex dummy: 1 = male, 0 = female	62.4%
Total	Count		649
	% within Hurdle binary part: 1 = positive count, 0 = zero count		100.0%
	% within Sex dummy: 1 = male, 0 = female		100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.108 ^a	1	.743		
Continuity Correction ^b	.061	1	.806		
Likelihood Ratio	.108	1	.743		
Fisher's Exact Test				.743	.402
Linear-by-Linear Association	.108	1	.743		
N of Valid Cases	649				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 100.01.

b. Computed only for a 2x2 table

Zero and Positive Count Context
Hurdle split by categorical predictors

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-.013	.743
	Cramer's V	.013	.743
N of Valid Cases		649	

**Hurdle binary part: 1 = positive count, 0 = zero count * Address dummy
: 1 = urban, 0 = rural**

Crosstab

			Address dummy: 1 = urban, 0 = rural	
			No / reference	Yes / target
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	76	168
		% within Hurdle binary part: 1 = positive count, 0 = zero count	31.1%	68.9%
		% within Address dummy: 1 = urban, 0 = rural	38.6%	37.2%
	Positive count	Count	121	284
		% within Hurdle binary part: 1 = positive count, 0 = zero count	29.9%	70.1%
		% within Address dummy: 1 = urban, 0 = rural	61.4%	62.8%
Total	Count		197	452
	% within Hurdle binary part: 1 = positive count, 0 = zero count		30.4%	69.6%
	% within Address dummy: 1 = urban, 0 = rural		100.0%	100.0%

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstab

			Total
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	244
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Address dummy: 1 = urban, 0 = rural	37.6%
	Positive count	Count	405
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Address dummy: 1 = urban, 0 = rural	62.4%
Total	Count		649
	% within Hurdle binary part: 1 = positive count, 0 = zero count		100.0%
	% within Address dummy: 1 = urban, 0 = rural		100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.116 ^a	1	.733		
Continuity Correction ^b	.064	1	.800		
Likelihood Ratio	.116	1	.733		
Fisher's Exact Test				.792	.399
Linear-by-Linear Association	.116	1	.733		
N of Valid Cases	649				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 74.06.

b. Computed only for a 2x2 table

Zero and Positive Count Context
Hurdle split by categorical predictors

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.013	.733
	Cramer's V	.013	.733
N of Valid Cases		649	

Hurdle binary part: 1 = positive count, 0 = zero count * Higher education intention dummy: yes

Crosstab

			Higher education intention dummy: yes	
			No / reference	Yes / target
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	23	221
		% within Hurdle binary part: 1 = positive count, 0 = zero count	9.4%	90.6%
		% within Higher education intention dummy: yes	33.3%	38.1%
	Positive count	Count	46	359
		% within Hurdle binary part: 1 = positive count, 0 = zero count	11.4%	88.6%
		% within Higher education intention dummy: yes	66.7%	61.9%
Total	Count		69	580
	% within Hurdle binary part: 1 = positive count, 0 = zero count		10.6%	89.4%
	% within Higher education intention dummy: yes		100.0%	100.0%

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstab

			Total
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	244
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Higher education intention dummy: yes	37.6%
	Positive count	Count	405
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Higher education intention dummy: yes	62.4%
Total	Count		649
	% within Hurdle binary part: 1 = positive count, 0 = zero count		100.0%
	% within Higher education intention dummy: yes		100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.598 ^a	1	.439		
Continuity Correction ^b	.412	1	.521		
Likelihood Ratio	.607	1	.436		
Fisher's Exact Test				.511	.262
Linear-by-Linear Association	.597	1	.440		
N of Valid Cases	649				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 25.94.

b. Computed only for a 2x2 table

Zero and Positive Count Context
Hurdle split by categorical predictors

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	-.030	.439
	Cramer's V	.030	.439
N of Valid Cases		649	

Hurdle binary part: 1 = positive count, 0 = zero count * Internet access dummy: yes

Crosstab

			Internet access dummy: yes	
			No / reference	Yes / target
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	58	186
		% within Hurdle binary part: 1 = positive count, 0 = zero count	23.8%	76.2%
		% within Internet access dummy: yes	38.4%	37.3%
	Positive count	Count	93	312
		% within Hurdle binary part: 1 = positive count, 0 = zero count	23.0%	77.0%
		% within Internet access dummy: yes	61.6%	62.7%
Total	Count		151	498
	% within Hurdle binary part: 1 = positive count, 0 = zero count		23.3%	76.7%
	% within Internet access dummy: yes		100.0%	100.0%

Zero and Positive Count Context
Hurdle split by categorical predictors

Crosstab

			Total
Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	Count	244
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Internet access dummy: yes	37.6%
	Positive count	Count	405
		% within Hurdle binary part: 1 = positive count, 0 = zero count	100.0%
		% within Internet access dummy: yes	62.4%
Total	Count		649
	% within Hurdle binary part: 1 = positive count, 0 = zero count		100.0%
	% within Internet access dummy: yes		100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.056 ^a	1	.814		
Continuity Correction ^b	.020	1	.889		
Likelihood Ratio	.056	1	.814		
Fisher's Exact Test				.848	.443
Linear-by-Linear Association	.056	1	.814		
N of Valid Cases	649				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 56.77.

b. Computed only for a 2x2 table

Zero and Positive Count Context
Hurdle split by categorical predictors

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.009	.814
	Cramer's V	.009	.814
N of Valid Cases		649	

Hurdle Part Logistic Regression

Hurdle Part Logistic Regression
Binary model for crossing the zero hurdle

Logistic Regression

Case Processing Summary

Unweighted Cases ^a		N	Percent
Selected Cases	Included in Analysis	649	100.0
	Missing Cases	0	.0
	Total	649	100.0
Unselected Cases		0	.0
Total		649	100.0

a. If weight is in effect, see classification table for the total number of cases.

Dependent Variable Encoding

Original Value	Internal Value
Zero count	0
Positive count	1

Block 0: Beginning Block

Classification Table^{a,b}

			Predicted		Percentage Correct
			Hurdle binary part: 1 = positive count, 0 = zero count		
Observed			Zero count	Positive count	
Step 0	Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	0	244	.0
		Positive count	0	405	100.0
	Overall Percentage				62.4

a. Constant is included in the model.

b. The cut value is .500

Hurdle Part Logistic Regression
Binary model for crossing the zero hurdle

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	.507	.081	39.096	1	.000	1.660

Variables not in the Equation

			Score	df	Sig.
Step 0	Variables	First period grade	12.490	1	.000
		Second period grade	5.584	1	.018
		Final grade	.684	1	.408
		Weekly study time group	3.069	1	.080
		Number of past class failures	3.226	1	.072
		age	3.374	1	.066
		Medu	.065	1	.798
		Fedu	1.538	1	.215
		health	.031	1	.859
		School dummy: 1 = MS, 0 = GP	4.915	1	.027
		Sex dummy: 1 = male, 0 = female	.108	1	.743
		Address dummy: 1 = urban, 0 = rural	.116	1	.733
		Higher education intention dummy: yes	.598	1	.439
		Internet access dummy: yes	.056	1	.814
		Overall Statistics	47.396	14	.000

Block 1: Method = Enter

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	49.758	14	.000
	Block	49.758	14	.000
	Model	49.758	14	.000

Hurdle Part Logistic Regression
Binary model for crossing the zero hurdle

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	809.587 ^a	.074	.101

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	7.867	8	.447

Contingency Table for Hosmer and Lemeshow Test

		Hurdle binary part: 1 = positive count, 0 = zero count = Zero count		Hurdle binary part: 1 = positive count, 0 = zero count = Positive count		Total
		Observed	Expected	Observed	Expected	
Step 1	1	42	40.876	23	24.124	65
	2	35	33.382	30	31.618	65
	3	32	30.023	33	34.977	65
	4	28	27.091	37	37.909	65
	5	18	24.776	47	40.224	65
	6	16	22.591	49	42.409	65
	7	24	20.586	41	44.414	65
	8	20	18.320	45	46.680	65
	9	17	15.313	48	49.687	65
	10	12	11.041	52	52.959	64

Hurdle Part Logistic Regression
Binary model for crossing the zero hurdle

Classification Table^a

Observed		Predicted		Percentage Correct
		Hurdle binary part: 1 = positive count, 0 = zero count		
		Zero count	Positive count	
Step 1	Hurdle binary part: 1 = positive count, 0 = zero count	Zero count	65	26.6
		Positive count	45	88.9
	Overall Percentage			65.5

a. The cut value is .500

Variables in the Equation

		B	S.E.	Wald	df	Sig.
Step 1 ^a	First period grade	-.247	.068	13.037	1	.000
	Second period grade	-.159	.088	3.246	1	.072
	Final grade	.265	.075	12.529	1	.000
	Weekly study time group	-.168	.107	2.457	1	.117
	Number of past class failures	.142	.180	.623	1	.430
	age	.099	.077	1.648	1	.199
	Medu	-.010	.102	.010	1	.919
	Fedu	.155	.102	2.325	1	.127
	health	-.019	.060	.105	1	.746
	School dummy: 1 = MS, 0 = GP	-.632	.203	9.643	1	.002
	Sex dummy: 1 = male, 0 = female	-.202	.181	1.248	1	.264
	Address dummy: 1 = urban, 0 = rural	-.093	.199	.219	1	.640
	Higher education intention dummy: yes	.184	.315	.341	1	.559
	Internet access dummy: yes	-.072	.213	.115	1	.734
	Constant	.680	1.428	.226	1	.634

Hurdle Part Logistic Regression
Binary model for crossing the zero hurdle

Variables in the Equation

		Exp(B)	95% C.I. for EXP(B)	
			Lower	Upper
Step 1 ^a	First period grade	.781	.683	.893
	Second period grade	.853	.718	1.014
	Final grade	1.303	1.126	1.509
	Weekly study time group	.845	.685	1.043
	Number of past class failures	1.153	.810	1.640
	age	1.104	.949	1.283
	Medu	.990	.811	1.208
	Fedu	1.168	.957	1.425
	health	.981	.873	1.103
	School dummy: 1 = MS, 0 = GP	.532	.357	.792
	Sex dummy: 1 = male, 0 = female	.817	.573	1.165
	Address dummy: 1 = urban, 0 = rural	.911	.617	1.345
	Higher education intention dummy: yes	1.202	.648	2.229
	Internet access dummy: yes	.930	.613	1.412
	Constant	1.973		

- a. Variable(s) entered on step 1: First period grade, Second period grade, Final grade, Weekly study time group, Number of past class failures, age, Medu, Fedu, health, School dummy: 1 = MS, 0 = GP, Sex dummy: 1 = male, 0 = female, Address dummy: 1 = urban, 0 = rural, Higher education intention dummy: yes, Internet access dummy: yes.

Positive-Count Part Poisson Model

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Generalized Linear Models

Model Information

Dependent Variable	Hurdle model count outcome: rounded absences clipped at zero
Probability Distribution	Poisson
Link Function	Log

Case Processing Summary

	N	Percent
Included	405	100.0%
Excluded	0	0.0%
Total	405	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean
Dependent Variable	Hurdle model count outcome: rounded absences clipped at zero	405	1	32	5.86
Covariate	First period grade	405	.000	18.000	11.10370
	Second period grade	405	5.000	18.000	11.36049
	Final grade	405	5.000	19.000	11.82469
	Weekly study time group	405	1	4	1.89
	Number of past class failures	405	0	3	.25
	age	405	15.000	22.000	16.81235
	Medu	405	0	4	2.52
	Fedu	405	0	4	2.35
	health	405	1	5	3.53
	School dummy: 1 = MS, 0 = GP	405	0	1	.32
	Sex dummy: 1 = male, 0 = female	405	0	1	.40

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Continuous Variable Information

		Std. Deviation
Dependent Variable	Hurdle model count outcome: rounded absences clipped at zero	4.646
Covariate	First period grade	2.617366
	Second period grade	2.511049
	Final grade	2.597863
	Weekly study time group	.840
	Number of past class failures	.635
	age	1.234546
	Medu	1.096
	Fedu	1.110
	health	1.455
	School dummy: 1 = MS, 0 = GP	.466
	Sex dummy: 1 = male, 0 = female	.491

Continuous Variable Information

		N	Minimum	Maximum	Mean
	Address dummy: 1 = urban, 0 = rural	405	0	1	.70
	Higher education intention dummy: yes	405	0	1	.89
	Internet access dummy: yes	405	0	1	.77

Continuous Variable Information

		Std. Deviation
	Address dummy: 1 = urban, 0 = rural	.458
	Higher education intention dummy: yes	.318
	Internet access dummy: yes	.421

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Goodness of Fit^a

	Value	df	Value/df
Deviance	1024.630	390	2.627
Scaled Deviance	341.568	390	
Pearson Chi-Square	1169.916	390	3.000
Scaled Pearson Chi-Square	390.000	390	
Log Likelihood ^{b,c}	-1198.882		
Adjusted Log Likelihood ^d	-399.656		
Akaike's Information Criterion (AIC)	2427.763		
Finite Sample Corrected AIC (AICC)	2428.997		
Bayesian Information Criterion (BIC)	2487.822		
Consistent AIC (CAIC)	2502.822		

Dependent Variable: Hurdle model count outcome: rounded absences clipped at zero

Model: (Intercept), First period grade, Second period grade, Final grade, Weekly study time group, Number of past class failures, age, Medu, Fedu, health, School dummy: 1 = MS, 0 = GP, Sex dummy: 1 = male, 0 = female, Address dummy: 1 = urban, 0 = rural, Higher education intention dummy: yes, Internet access dummy: yes

- a. Information criteria are in smaller-is-better form.
- b. The full log likelihood function is displayed and used in computing information criteria.
- c. The log likelihood is based on a scale parameter fixed at 1.
- d. The adjusted log likelihood is based on an estimated scale parameter and is used in the model fitting omnibus test.

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Omnibus Test^a

Likelihood Ratio Chi-Square	df	Sig.
66.756	14	.000

Dependent Variable: Hurdle model
count outcome: rounded absences
clipped at zero
Model: (Intercept), First period grade,
Second period grade, Final grade,
Weekly study time group, Number of
past class failures, age, Medu, Fedu,
health, School dummy: 1 = MS, 0 = GP,
Sex dummy: 1 = male, 0 = female,
Address dummy: 1 = urban, 0 = rural,
Higher education intention dummy: yes,
Internet access dummy: yes

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Wald Chi-Square	Type III	
		df	Sig.
(Intercept)	4.329	1	.037
First period grade	.608	1	.435
Second period grade	.001	1	.980
Final grade	2.591	1	.107
Weekly study time group	4.218	1	.040
Number of past class failures	.025	1	.874
age	7.925	1	.005
Medu	1.658	1	.198
Fedu	1.725	1	.189
health	2.944	1	.086

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Tests of Model Effects

Source	Wald Chi-Square	Type III	
		df	Sig.
School dummy: 1 = MS, 0 = GP	20.989	1	.000
Sex dummy: 1 = male, 0 = female	.002	1	.962
Address dummy: 1 = urban, 0 = rural	.785	1	.376
Higher education intention dummy: yes	1.811	1	.178
Internet access dummy: yes	1.791	1	.181

Dependent Variable: Hurdle model count outcome: rounded absences clipped at zero

Model: (Intercept), First period grade, Second period grade, Final grade, Weekly study time group, Number of past class failures, age, Medu, Fedu, health, School dummy: 1 = MS, 0 = GP, Sex dummy: 1 = male, 0 = female, Address dummy: 1 = urban, 0 = rural, Higher education intention dummy: yes, Internet access dummy: yes

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test
			Lower	Upper	Wald Chi-Square
(Intercept)	1.270	.6103	.074	2.466	4.329
First period grade	.022	.0286	-.034	.078	.608
Second period grade	-.001	.0438	-.087	.085	.001
Final grade	-.069	.0428	-.153	.015	2.591
Weekly study time group	-.097	.0473	-.190	-.004	4.218
Number of past class failures	-.010	.0616	-.130	.111	.025
age	.090	.0320	.027	.153	7.925
Medu	-.059	.0457	-.149	.031	1.658
Fedu	.056	.0430	-.028	.141	1.725
health	-.043	.0250	-.092	.006	2.944
School dummy: 1 = MS, 0 = GP	-.422	.0922	-.603	-.242	20.989
Sex dummy: 1 = male, 0 = female	-.004	.0772	-.155	.148	.002
Address dummy: 1 = urban, 0 = rural	.076	.0860	-.092	.245	.785
Higher education intention dummy: yes	-.156	.1156	-.382	.071	1.811
Internet access dummy: yes	.126	.0942	-.059	.311	1.791
(Scale)	3.000 ^a				

Positive-Count Part Poisson Model
GENLINPoisson log model fitted only to positive counts

Parameter Estimates

Parameter	Hypothesis Test	
	df	Sig.
(Intercept)	1	.037
First period grade	1	.435
Second period grade	1	.980
Final grade	1	.107
Weekly study time group	1	.040
Number of past class failures	1	.874
age	1	.005
Medu	1	.198
Fedu	1	.189
health	1	.086
School dummy: 1 = MS, 0 = GP	1	.000
Sex dummy: 1 = male, 0 = female	1	.962
Address dummy: 1 = urban, 0 = rural	1	.376
Higher education intention dummy: yes	1	.178
Internet access dummy: yes	1	.181
(Scale)		

Dependent Variable: Hurdle model count outcome: rounded absences clipped at zero

Model: (Intercept), First period grade, Second period grade, Final grade, Weekly study time group, Number of past class failures, age, Medu, Fedu, health, School dummy: 1 = MS, 0 = GP, Sex dummy: 1 = male, 0 = female, Address dummy: 1 = urban, 0 = rural, Higher education intention dummy: yes, Internet access dummy: yes

a. Computed based on the Pearson chi-square.

Positive Count Log-Linear Sensitivity Model

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Regression

Variables Entered/Removed^a

Model	Variables Entered	Variables Removed	Method
1	Internet access dummy: yes, health, Higher education intention dummy: yes, Address dummy: 1 = urban, 0 = rural, Weekly study time group, Fedu, Sex dummy: 1 = male, 0 = female, Number of past class failures, age, School dummy: 1 = MS, 0 = GP, Second period grade, Medu, First period grade, Final grade ^b	.	Enter

a. Dependent Variable: Natural log of positive count, positive observations only

b. All requested variables entered.

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.359 ^a	.129	.097	.688562

a. Predictors: (Constant), Internet access dummy: yes, health, Higher education intention dummy: yes, Address dummy: 1 = urban, 0 = rural, Weekly study time group, Fedu, Sex dummy: 1 = male, 0 = female, Number of past class failures, age, School dummy: 1 = MS, 0 = GP, Second period grade, Medu, First period grade, Final grade

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.284	14	1.949	4.110	.000 ^b
	Residual	184.906	390	.474		
	Total	212.189	404			

a. Dependent Variable: Natural log of positive count, positive observations only

b. Predictors: (Constant), Internet access dummy: yes, health, Higher education intention dummy: yes, Address dummy: 1 = urban, 0 = rural, Weekly study time group, Fedu, Sex dummy: 1 = male, 0 = female, Number of past class failures, age, School dummy: 1 = MS, 0 = GP, Second period grade, Medu, First period grade, Final grade

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.936	.598		1.566	.118
	First period grade	.001	.027	.003	.026	.979
	Second period grade	.015	.043	.051	.336	.737
	Final grade	-.062	.043	-.224	-1.445	.149
	Weekly study time group	-.075	.043	-.086	-1.725	.085
	Number of past class failures	-.017	.063	-.015	-.267	.790
	age	.093	.032	.159	2.919	.004
	Medu	-.038	.044	-.057	-.863	.389
	Fedu	.035	.042	.053	.829	.408
	health	-.034	.024	-.069	-1.406	.160
	School dummy: 1 = MS, 0 = GP	-.364	.084	-.234	-4.329	.000
	Sex dummy: 1 = male, 0 = female	.078	.074	.053	1.052	.293
	Address dummy: 1 = urban, 0 = rural	.070	.080	.045	.880	.379
	Higher education intention dummy: yes	-.182	.122	-.080	-1.499	.135
	Internet access dummy: yes	.059	.086	.034	.681	.496

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Coefficients^a

Model		95.0% Confidence Interval for B	
		Lower Bound	Upper Bound
1	(Constant)	-.239	2.111
	First period grade	-.053	.055
	Second period grade	-.071	.100
	Final grade	-.147	.023
	Weekly study time group	-.159	.010
	Number of past class failures	-.141	.107
	age	.030	.156
	Medu	-.125	.049
	Fedu	-.047	.116
	health	-.082	.014
	School dummy: 1 = MS, 0 = GP	-.530	-.199
	Sex dummy: 1 = male, 0 = female	-.068	.224
	Address dummy: 1 = urban, 0 = rural	-.087	.228
	Higher education intention dummy: yes	-.421	.057
	Internet access dummy: yes	-.111	.228

a. Dependent Variable: Natural log of positive count, positive observations only

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	(Constant)	Variance Proportions	
					First period grade	Second period grade
1	1	11.611	1.000	.00	.00	.00
	2	1.010	3.391	.00	.00	.00
	3	.697	4.081	.00	.00	.00
	4	.584	4.461	.00	.00	.00
	5	.246	6.876	.00	.00	.00
	6	.220	7.261	.00	.00	.00
	7	.191	7.802	.00	.00	.00
	8	.148	8.859	.00	.00	.00
	9	.116	9.999	.00	.01	.00
	10	.081	11.978	.00	.01	.00
	11	.054	14.600	.00	.00	.00
	12	.029	20.050	.04	.04	.01
	13	.009	36.767	.01	.85	.10
	14	.003	66.067	.10	.01	.77
	15	.002	80.529	.85	.07	.12

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Collinearity Diagnostics^a

Model	Dimension	Variance Proportions					
		Final grade	Weekly study time group	Number of past class failures	age	Medu	Fedu
1	1	.00	.00	.00	.00	.00	.00
	2	.00	.00	.41	.00	.00	.00
	3	.00	.00	.18	.00	.00	.00
	4	.00	.01	.11	.00	.00	.00
	5	.00	.02	.02	.00	.01	.01
	6	.00	.09	.00	.00	.05	.06
	7	.00	.00	.01	.00	.07	.17
	8	.00	.27	.01	.00	.00	.01
	9	.00	.52	.03	.00	.01	.03
	10	.00	.03	.01	.00	.00	.00
	11	.00	.00	.00	.00	.87	.71
	12	.01	.04	.18	.06	.00	.00
	13	.09	.00	.00	.00	.00	.00
	14	.67	.00	.00	.08	.00	.00
	15	.23	.00	.04	.86	.00	.01

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Collinearity Diagnostics^a

Model	Dimension	Variance Proportions				
		health	School dummy: 1 = MS, 0 = GP	Sex dummy: 1 = male, 0 = female	Address dummy: 1 = urban, 0 = rural	Higher education intention dummy: yes
1	1	.00	.00	.00	.00	.00
	2	.00	.12	.01	.00	.00
	3	.00	.47	.07	.02	.00
	4	.00	.02	.72	.01	.00
	5	.00	.09	.00	.88	.00
	6	.06	.06	.03	.00	.01
	7	.01	.00	.00	.00	.00
	8	.58	.00	.12	.01	.00
	9	.14	.01	.00	.01	.10
	10	.01	.00	.02	.01	.80
	11	.02	.00	.01	.00	.00
	12	.13	.20	.01	.05	.00
	13	.02	.00	.00	.00	.00
	14	.01	.00	.00	.00	.00
	15	.01	.01	.00	.00	.07

Positive Count Log-Linear Sensitivity Model
OLS check on natural log positive counts

Collinearity Diagnostics^a

Model	Dimension	Variance ...
		Internet access dummy: yes
1	1	.00
	2	.00
	3	.00
	4	.00
	5	.01
	6	.36
	7	.52
	8	.00
	9	.02
	10	.03
	11	.02
	12	.03
	13	.00
	14	.00
	15	.01

a. Dependent Variable: Natural log of positive count, positive observations only

Hurdle Model Reporting Notes

Hurdle Model Reporting Notes
Interpretation guide

Frequencies

Statistics

Hurdle binary part: 1 = positive count, 0 = zero count

N	Valid	649
	Missing	0

Hurdle binary part: 1 = positive count, 0 = zero count

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Zero count	244	37.6	37.6	37.6
	Positive count	405	62.4	62.4	100.0
	Total	649	100.0	100.0	