

Scope Sensitivity Analysis

Section 1: Analysis on Overall Accuracy Score

Overall accuracy score (accuracy_score) is a measurement of participants' response accuracy in keeping their per life valuations proportional with increasing quantities of lives by averaging the differences between each of their per life valuation from small to medium and from medium to large scope questions for all three life forms: birds, turtles, and humans. A score of zero indicates that the participant's valuations were perfectly proportional. The higher the score, the less accurate the participant's valuations were.

Sample Calculation

1) Participant Responses

Small: Amount willing to pay to save 200 birds: \$20

Medium: Amount willing to pay to save 2,000 birds: \$25

Large: Amount willing to pay to save 20,000 birds: \$40

2) Per Life Valuations

Small: $\$20 / 200 \text{ birds} = \0.10 per bird

Medium: $\$25 / 2,000 \text{ birds} = \0.0125 per bird

Large: $\$40 / 20,000 \text{ birds} = \0.002 per bird

3) Difference Calculations

Absolute value of the small valuation minus the medium valuation: $\$0.10 - \$0.0125 = \$0.0875$

Absolute value of the medium valuation minus the large valuation: $\$0.0125 - \$0.002 = \$0.0105$

4) Score calculation

Average difference: $(\$0.0875 + \$0.0105) / 2 = .098$

This number was multiplied by 1,000 to avoid reporting the small decimals that were often present and are known to confuse readers.

This participant's accuracy score would be 980.

The process was repeated for the turtle and human questions, then added for each participant to calculate their final accuracy score.

Figure 1: Overall Participant Accuracy - Full Regression & F-Test of Joint Significance on Form Type

Source	SS	df	MS	Number of obs	=	56
Model	1.1973e+11	25	4.7890e+09	F(25, 30)	=	1.05
Residual	1.3681e+11	30	4.5602e+09	Prob > F	=	0.4449
				R-squared	=	0.4667
				Adj R-squared	=	0.0223
Total	2.5653e+11	55	4.6642e+09	Root MSE	=	67529

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]
math_activity	8472.273	28731.34	0.29	0.770	-50204.96 67149.5
activity_score	-99053.63	55956.62	-1.77	0.087	-213332.3 15225.04
msl	11901.72	43419.91	0.27	0.786	-76773.57 100577
slm	42641.45	52416.1	0.81	0.422	-64406.51 149689.4
lsm	78482.87	41263.98	1.90	0.067	-5789.428 162755.2
lms	18148.85	42723.91	0.42	0.674	-69105.02 105402.7
mls	37229.37	41669.54	0.89	0.379	-47871.18 122329.9
age	-1925.927	1470.559	-1.31	0.200	-4929.21 1077.355
male	1011.532	36085.67	0.03	0.978	-72685.23 74708.3
female	12718.43	39643.89	0.32	0.751	-68245.19 93682.06
black_or_africanamerican	153082.1	78527.84	1.95	0.061	-7293.166 313457.3
hispanic_or_latnix	43857.23	88413.99	0.50	0.623	-136708.2 224422.7
asian_or_pacificislander	4844.862	82230.5	0.06	0.953	-163092.2 172781.9
white	29012.99	71031	0.41	0.686	-116051.7 174077.6
completed_graduate_degree	11102.31	72262.06	0.15	0.879	-136476.5 158681.1
completed_bachelors_degree	-49449.56	71250.94	-0.69	0.493	-194963.4 96064.27
current_undergrad	-27039.02	69490.08	-0.39	0.700	-168956.7 114878.7
high_school_diploma	-46371.96	76262.28	-0.61	0.548	-202120.3 109376.4
incomplete_high_school	-99954.99	120014.9	-0.83	0.412	-345058.1 145148.2
current_graduatestu	32972.46	89924.72	0.37	0.716	-150678.3 216623.3
annual_income	.1004359	.096951	1.04	0.309	-.0975645 .2984363
ess_spend	.0048393	.0946893	0.05	0.960	-.1885421 .1982207
noness_spend	-.3178271	.6232201	-0.51	0.614	-1.590612 .9549582
charity_past	31483.45	78368.24	0.40	0.691	-128565.9 191532.8
charity_future	-24536.2	43137.88	-0.57	0.574	-112635.5 63563.09
_cons	66758.68	99845.27	0.67	0.509	-137152.6 270669.9


```

. test msl slm lsm lms mls

( 1)  msl = 0
( 2)  slm = 0
( 3)  lsm = 0
( 4)  lms = 0
( 5)  mls = 0

F( 5, 30) = 1.11
Prob > F = 0.3761

. di invFtail(5, 30, .05)
2.5335545

```

Since the calculated F-static of 1.11 is less than the calculated critical F-statistic of 2.5335545 and it has a corresponding p-value of 0.3761 that is greater than the critical p-value of 0.05, I fail to reject the null hypothesis at alpha levels of 0.05. Given the

sample, there is insufficient evidence to conclude that the different form types MSL, SLM, LSM, LMS, and MLS are jointly significant. Therefore, form type does not have a jointly significant effect on accuracy score.

Figure 2: Figure 1 Regression without Form Type

Source	SS	df	MS	Number of obs	=	56
Model	9.1124e+10	19	4.7960e+09	F(19, 36)	=	1.04
Residual	1.6541e+11	36	4.5947e+09	Prob > F	=	0.4413
				R-squared	=	0.3552
				Adj R-squared	=	0.0149
Total	2.5653e+11	55	4.6642e+09	Root MSE	=	67784

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	22195.29	27359.46	0.81	0.423	-33292.27	77682.85
activity_score	-114852.9	53983.39	-2.13	0.040	-224336.2	-5369.489
male	1237.704	34017.96	0.04	0.971	-67753.92	70229.33
female	17425.82	35972.71	0.48	0.631	-55530.21	90381.86
black_or_africanamerican	143350.7	71725.09	2.00	0.053	-2114.484	288816
hispanic_or_latnix	29461.35	84349.29	0.35	0.729	-141606.9	200529.6
asian_or_pacificislander	19730.17	74682.7	0.26	0.793	-131733.4	171193.7
white	35796.8	61419.41	0.58	0.564	-88767.54	160361.1
completed_graduate_degree	3579.479	68681.5	0.05	0.959	-135713.1	142872
completed_bachelors_degree	-49143.76	67086.25	-0.73	0.469	-185201	86913.46
current_undergrad	-1363.863	67343.39	-0.02	0.984	-137942.6	135214.9
high_school_diploma	-21550.61	71611.25	-0.30	0.765	-166784.9	123683.7
incomplete_high_school	-56448.27	109967	-0.51	0.611	-279471.8	166575.2
current_graduatestu	22857.48	86714.53	0.26	0.794	-153007.7	198722.7
annual_income	.0934475	.0898351	1.04	0.305	-.0887465	.2756414
ess_spend	-.0002035	.0789491	-0.00	0.998	-.1603197	.1599127
noness_spend	-.4501691	.5778402	-0.78	0.441	-1.622083	.7217451
charity_past	7032.408	61954.26	0.11	0.910	-118616.6	132681.5
charity_future	1709.464	39204.18	0.04	0.965	-77800.31	81219.23
_cons	30563.76	88824.75	0.34	0.733	-149581.2	210708.7

Figure 3: Condensed Education Regression without Form Type & F-Test of Joint Significance on Charity Variables

Condensed education variable: $\text{other_education2} = \text{other_education} + \text{incomplete_high_school} + \text{current_graduatestu} + \text{high_school_diploma}$

Source	SS	df	MS	Number of obs	=	56
Model	8.8342e+10	16	5.5214e+09	F(16, 39)	=	1.28
Residual	1.6819e+11	39	4.3126e+09	Prob > F	=	0.2575
Total	2.5653e+11	55	4.6642e+09	R-squared	=	0.3444
				Adj R-squared	=	0.0754
				Root MSE	=	65670

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]
math_activity	19465.93	25068.38	0.78	0.442	-31239.64 70171.51
activity_score	-104570.3	49912.73	-2.10	0.043	-205528.3 -3612.292
male	2012.905	32228.55	0.06	0.951	-63175.49 67201.3
female	20832.27	34274.55	0.61	0.547	-48494.55 90159.09
black_or_africanamerican	123291.9	62952.59	1.96	0.057	-4041.697 250625.5
hispanic_or_latnix	-6083.965	68699.19	-0.09	0.930	-145041.2 132873.3
asian_or_pacificislander	1566.865	65923.1	0.02	0.981	-131775.2 134908.9
white	18059.94	52042.31	0.35	0.730	-87205.57 123325.5
completed_graduate_degree	10126.03	33730.83	0.30	0.766	-58101.01 78353.07
completed_bachelors_degree	-39010.05	33681.64	-1.16	0.254	-107137.6 29117.49
current_undergrad	6084.222	37827.41	0.16	0.873	-70428.94 82597.38
annual_income	.0838594	.085847	0.98	0.335	-.0897826 .2575013
ess_spend	-.0152337	.0720981	-0.21	0.834	-.1610659 .1305986
noness_spend	-.3950996	.552589	-0.71	0.479	-1.512816 .7226173
charity_past	12331.25	46504.8	0.27	0.792	-81733.58 106396.1
charity_future	668.8173	35449.89	0.02	0.985	-71035.35 72372.98
_cons	29813.93	79014.67	0.38	0.708	-130008.3 189636.2


```

. test charity_past charity_future

( 1) charity_past = 0
( 2) charity_future = 0

F( 2, 39) = 0.04
Prob > F = 0.9646

. di invFtail(2, 39, .05) // 3.2380961
3.2380961

```

Education was condensed because the number of participants characterized by the incomplete_high_school, current_graudatestu, and high_school_diploma variables are less than 5 each. After condensing the variables, the number of participants denoted by other_education2 is 12.

Since the calculated F-static of 0.04 is less than the calculated critical F-statistic of 3.23, and it has a corresponding p-value of 0.9646 that is greater than the critical p-value of 0.05, I fail to reject the null hypothesis at alpha levels of 0.05. Given the sample, there is insufficient evidence to conclude that the charity variables: charity_past and charity_future, are jointly significant. Therefore, the charity variables do not have a jointly significant effect on accuracy score.

Figure 4: Figure 3 Regression without Charity Variables & F-Test of Joint Significance on Spending Variables

Source	SS	df	MS	Number of obs	=	67	(1) ess_spend = 0
Model	5.9238e+12	14	4.2313e+11	F(14, 52)	=	1.17	(2) noness_spend = 0
Residual	1.8761e+13	52	3.6079e+11	Prob > F	=	0.3232	F(2, 52) = 0.39
				R-squared	=	0.2400	Prob > F = 0.6786
				Adj R-squared	=	0.0354	
Total	2.4685e+13	66	3.7401e+11	Root MSE	=	6.0e+05	. di invFtail(2, 52, .05) // 3.175141
							3.175141

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]
math_activity	-31603.39	199287.8	-0.16	0.875	-431503.7 368296.9
activity_score	-203274.3	389296.1	-0.52	0.604	-984454.2 577905.5
male	-87062.19	261287.7	-0.33	0.740	-611374.2 437249.9
female	-261350	267887.6	-0.98	0.334	-798905.8 276205.9
black_or_africanamerican	271997.8	533144.6	0.51	0.612	-797835.1 1341831
hispanic_or_latnix	145600.5	540198.1	0.27	0.789	-938386.2 1229587
asian_or_pacificislander	1129637	547904.4	2.06	0.044	30186.67 2229088
white	295343.7	460131.1	0.64	0.524	-627976.8 1218664
completed_graduate_degree	291205.5	263013.7	1.11	0.273	-236570.1 818981.1
completed_bachelors_degree	-18290.97	259358	-0.07	0.944	-538730.8 502148.8
current_undergrad	-452329	313023	-1.45	0.154	-1080456 175797.6
annual_income	-.2545899	.6994035	-0.36	0.717	-1.658046 1.148866
ess_spend	.0940515	.6459308	0.15	0.885	-1.202104 1.390206
noness_spend	-4.383928	4.961549	-0.88	0.381	-14.34 5.572149
_cons	60563.69	494173	0.12	0.903	-931066.9 1052194

Since the calculated F-static of 0.39 is less than the calculated critical F-statistic of 3.23, and it has a corresponding p-value of 0.6786 that is greater than the critical p-value of 0.05, I fail to reject the null hypothesis at alpha levels of 0.05. Given the sample, there is insufficient evidence to conclude that the spending variables: ess_spend and noness_spend, are jointly significant. Therefore, the spending variables do not have a jointly significant effect on accuracy score.

Figure 5: Figure 4 Regression without the Spending variables & F-Tests of Joint Significance on Ethnicity and Gender

Source	SS	df	MS	Number of obs = 67		(1) black_or_africanamerican = 0
				F(12, 54) = 1.33		(2) hispanic_or_latnix = 0
Model	5.6419e+12	12	4.7016e+11	Prob > F = 0.2277		(3) asian_or_pacificislander = 0
Residual	1.9043e+13	54	3.5265e+11	R-squared = 0.2286		(4) white = 0
				Adj R-squared = 0.0571		
Total	2.4685e+13	66	3.7401e+11	Root MSE = 5.9e+05		
					F(4, 54) = 2.61	
					Prob > F = 0.0452	

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	-39395.94	195729.5	-0.20	0.841	-431810.1	353018.2
activity_score	-151807.3	379891.9	-0.40	0.691	-913444.8	609830.2
male	-117431.4	253113.4	-0.46	0.645	-624893.3	390030.4
female	-254386	258076.9	-0.99	0.329	-771799	263027
black_or_africanamerican	210623.1	447846	0.47	0.640	-687254.1	1108500
hispanic_or_latnix	98054.02	481375.1	0.20	0.839	-867045	1063153
asian_or_pacificislander	1076360	468869.8	2.30	0.026	136332.8	2016388
white	226531	372617.3	0.61	0.546	-520521.6	973583.6
completed_graduate_degree	248517.2	249673.7	1.00	0.324	-252048.5	749082.9
completed_bachelors_degree	-21195.29	253797.5	-0.08	0.934	-530028.6	487638.1
current_undergrad	-466129	305547	-1.53	0.133	-1078714	146455.9
annual_income	-.2493751	.6910017	-0.36	0.720	-1.63475	1.136
_cons	103211.2	448986.4	0.23	0.819	-796952.3	1003375

(1) completed_graduate_degree = 0	
(2) completed_bachelors_degree = 0	
(3) current_undergrad = 0	
F(3, 54) = 2.74	
Prob > F = 0.0520	

(1) male = 0	
(2) female = 0	
F(2, 54) = 0.61	
Prob > F = 0.5468	

Since the calculated F-statistics for education and gender are both less than their respective calculated critical F-statistics of 2.78 and 3.17 respectively, and both of their calculated p-values are greater than the critical p-value of 0.05, I fail to reject the null hypotheses at alpha levels of 0.05. Given the sample, there is insufficient evidence to conclude that the education and gender variables are respectively jointly significant. Therefore, the variables do not have a significant effect on accuracy score.

Alternatively since the calculated F-static for the ethnicity variables is 2.61 which is greater than the calculated critical F-statistic of 2.54 and the calculated p-value of 0.0452 is less than the critical p-value of 0.05, there is evidence that the null hypothesis is incorrect. Given the sample, there is evidence that the ethnicity variables are jointly significant.

Figure 6: Figure 5 without the Education and Gender Variables & F-Test of Joint Significance on Ethnicity

Source	SS	df	MS	Number of obs = 67	(1) black_or_africanamerican = 0
Model	2.5089e+12	7	3.5841e+11	F(7, 59) = 0.95	(2) hispanic_or_latnix = 0
Residual	2.2176e+13	59	3.7587e+11	Prob > F = 0.4732	(3) asian_or_pacificislander = 0
Total	2.4685e+13	66	3.7401e+11	R-squared = 0.1016	(4) white = 0
				Adj R-squared = -0.0049	
				Root MSE = 6.1e+05	
					F(4, 59) = 1.27
					Prob > F = 0.2905

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]
math_activity	-30466.32	201540.7	-0.15	0.880	-433748.2 372815.6
activity_score	-384505.5	378321.4	-1.02	0.314	-1141525 372513.7
black_or_africanamerican	60315.41	438056.6	0.14	0.891	-816233.7 936864.5
hispanic_or_latnix	-127545.8	476228	-0.27	0.790	-1080476 825384.3
asian_or_pacificislander	489789.5	412711.3	1.19	0.240	-336043.9 1315623
white	36098.28	371441.2	0.10	0.923	-707153.8 779350.3
annual_income	-.0645761	.6900283	-0.09	0.926	-1.44532 1.316167
_cons	281193.3	403841.8	0.70	0.489	-526892.3 1089279

Since the calculated F-static of 1.27 is less than the calculated critical F-statistic of 2.53, and it has a corresponding p-value of 0.2905 that is greater than the critical p-value of 0.05, I fail to reject the null hypothesis at alpha levels of 0.05. Given the sample, there is insufficient evidence to conclude that the ethnicity variables are jointly significant. Therefore, the ethnicity variables do not have a jointly significant effect on accuracy score.

Figure 7: Activity Variables Only Regression

Source	SS	df	MS	Number of obs	=	77
Model	4.7665e+11	2	2.3833e+11	F(2, 74)	=	0.73
Residual	2.4266e+13	74	3.2792e+11	Prob > F	=	0.4869
				R-squared	=	0.0193
				Adj R-squared	=	-0.0072
Total	2.4743e+13	76	3.2556e+11	Root MSE	=	5.7e+05

accuracy_score	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	-102635.9	158156.5	-0.65	0.518	-417769.6	212497.8
activity_score	-129779.5	274875.7	-0.47	0.638	-677481.3	417922.2
_cons	219965.8	184267.8	1.19	0.236	-147195.8	587127.3

Since the base regression T-statistics are small, the calculated T-test p-values are greater than the critical p-value of 0.05, and 0 is within the 95% confidence intervals for all three variables, there is insufficient evidence to conclude significance in the sample for a relationship between participants taking the intervention, their respective activity score, and the scope sensitivity measurement, accuracy score.

Section 2: Analysis on the Accuracy Scores for Birds, Turtles, and Humans

SUMMARY

Contains data from ScopeSensitivityData.dta

Observations: 77

Variables: 67

21 Nov 2022 21:23

FIGURE 8: Accuracy Score For Birds Linear-Linear Regression Model

Source	SS	df	MS	Number of obs	=	56	
Model	27985.93	25	1119.4372	F(25, 30)	=	1.05	(1) msl = 0
Residual	32050.8491	30	1068.36164	Prob > F	=	0.4473	(2) slm = 0
				R-squared	=	0.4661	(3) lsm = 0
				Adj R-squared	=	0.0213	(4) lms = 0
Total	60036.779	55	1091.5778	Root MSE	=	32.686	(5) mls = 0

F(5, 30) =	1.09
Prob > F =	0.3869

accuracy_bird	Coefficient	Std. err.	t	P> t	[95% conf. interval]
math_activity	4.605184	13.90668	0.33	0.743	-23.79604 33.00641
activity_score	-47.61178	27.08438	-1.76	0.089	-102.9255 7.701901
msl	4.835984	21.0163	0.23	0.820	-38.08503 47.757
slm	18.98458	25.37068	0.75	0.460	-32.82926 70.79842
lsm	37.07708	19.97278	1.86	0.073	-3.712785 77.86694
lms	8.421516	20.67942	0.41	0.687	-33.8115 50.65453
mls	18.22337	20.16908	0.90	0.373	-22.96739 59.41413
age	-.9047687	.7117868	-1.27	0.213	-2.358431 .5488939
male	.2896857	17.46635	0.02	0.987	-35.38136 35.96073
female	6.377469	19.18862	0.33	0.742	-32.81091 45.56585
black_or_africanamerican	73.05328	38.0094	1.92	0.064	-4.572277 150.6788
hispanic_or_latnix	18.35578	42.79454	0.43	0.671	-69.04233 105.7539
asian_or_pacificislander	1.595348	39.80158	0.04	0.968	-79.69032 82.88102
white	12.149	34.38075	0.35	0.726	-58.06586 82.36385
completed_graduate_degree	5.276859	34.97661	0.15	0.881	-66.15492 76.70863
completed_bachelors_degree	-23.25382	34.4872	-0.67	0.505	-93.68609 47.17844
current_undergrad	-12.77147	33.63491	-0.38	0.707	-81.46311 55.92017
high_school_diploma	-21.03341	36.91282	-0.57	0.573	-96.41944 54.35262
incomplete_high_school	-46.98847	58.09016	-0.81	0.425	-165.6244 71.64747
current_graduatestu	14.44663	43.52577	0.33	0.742	-74.44486 103.3381
annual_income	.0000466	.0000469	0.99	0.329	-.0000493 .0001424
ess_spend	7.42e-08	.0000458	0.00	0.999	-.0000935 .0000937
noness_spend	-.0001496	.0003017	-0.50	0.624	-.0007656 .0004665
charity_past	13.85426	37.93215	0.37	0.717	-63.61353 91.32205
charity_future	-11.45895	20.87979	-0.55	0.587	-54.10117 31.18328
_cons	34.45097	48.32756	0.71	0.481	-64.24708 133.149

In the regression seen above (Figure 8), there are no t-values greater than the critical value of 1.96 and there are no p-values less than the critical value of 0.05 which means we can not say that any of these variables have a significant relationship with the dependent variable, 'accuracy_bird.' Additionally, with an R-squared value of 0.466, we can infer that perhaps a linear-linear model is not that best fit. Therefore, I tested additional regression models to see if they held any compelling results. Additionally, we

can see that form-type is not significant due to the joint-significance test outputting a F-stat of 1.09 which is less than the critical value of 1.96 and a p-value of 0.387 which is greater than the critical value of 0.05. This means that the order in which the scope-scaling questions was not significant.

FIGURE 9: Accuracy Score for Birds Log-Linear Regression Model

Source	SS	df	MS	Number of obs	=	49	
Model	221.73369	25	8.86934759	F(25, 23)	=	1.73	(1) msl = 0
Residual	118.00934	23	5.13084088	Prob > F	=	0.0956	(2) slm = 0
				R-squared	=	0.6527	(3) lsm = 0
				Adj R-squared	=	0.2751	(4) lms = 0
Total	339.74303	48	7.07797979	Root MSE	=	2.2651	(5) mls = 0

logAccBird	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	2.390472	1.172294	2.04	0.053	-.0346022	4.815546
activity_score	-4.685881	2.166572	-2.16	0.041	-9.167776	-.203986
msl	-.8249306	1.624583	-0.51	0.616	-4.185637	2.535776
slm	-1.001989	2.023733	-0.50	0.625	-5.188399	3.184421
lsm	-.0994972	1.83866	-0.05	0.957	-3.903054	3.70406
lms	-.6118081	1.631194	-0.38	0.711	-3.986189	2.762573
mls	2.56119	1.540024	1.66	0.110	-.6245937	5.746973
age	.0697553	.0606206	1.15	0.262	-.055648	.1951586
male	-.5771318	1.277904	-0.45	0.656	-3.220677	2.066414
female	-.1988645	1.361153	-0.15	0.885	-3.014624	2.616895
black_or_africanamerican	1.024456	2.910573	0.35	0.728	-4.996523	7.045434
hispanic_or_latnix	-5.218494	3.857036	-1.35	0.189	-13.19738	2.760392
asian_or_pacificislander	-2.215328	2.923814	-0.76	0.456	-8.263699	3.833043
white	-2.409281	2.478214	-0.97	0.341	-7.535857	2.717296
completed_graduate_degree	1.670214	3.859847	0.43	0.669	-6.314487	9.654916
completed_bachelors_degree	-1.100568	3.865159	-0.28	0.778	-9.096258	6.895122
current_undergrad	.9661223	3.601915	0.27	0.791	-6.485007	8.417251
high_school_diploma	1.415269	3.797162	0.37	0.713	-6.439759	9.270297
incomplete_high_school	.1619286	4.917802	0.03	0.974	-10.01132	10.33518
current_graduatestu	-2.230741	4.239025	-0.53	0.604	-10.99983	6.538351
annual_income	-4.68e-06	3.90e-06	-1.20	0.243	-.0000128	3.39e-06
ess_spend	-9.69e-06	3.35e-06	-2.89	0.008	-.0000166	-2.76e-06
noness_spend	-.0000227	.0000462	-0.49	0.628	-.0001183	.0000729
charity_past	1.194547	2.942731	0.41	0.689	-4.892956	7.282051
charity_future	1.624165	1.935792	0.84	0.410	-2.380326	5.628657
_cons	-3.053699	3.849352	-0.79	0.436	-11.01669	4.909292

F(5, 23) =	2.32
Prob > F =	0.0759

The R-squared value for this regression (Figure 9) is 0.653, which is worse than before.

This means the log-linear model is a worse fit for our data. There are two variables that show a significant relationship with the dependent variable: ‘activity_score’ and ‘ess_spend’. This implies that the performance on the activity (math or grammar) correlates with the participants’ ability to accurately scale scope when it comes to donations that would hypothetically save birds. It also implies that essential spending is

significantly related. However, since this model does not fit the data well, I am not confident in these findings. Another thing to note is that the variable ‘math_activity’ is very close to being significant, but since the p-value of 0.053 is greater than the critical value of 0.05, it is not significant. Finally, a joint-significance test for form-type shows that the order in which we asked the scope-scaling questions doesn’t matter.

FIGURE 10: Accuracy for Bird Linear-Log Regression Model

Source	SS	df	MS	Number of obs	=	54	
Model	29189.0836	25	1167.56334	F(25, 28)	=	1.06	(1) msl = 0
Residual	30801.0762	28	1100.03843	Prob > F	=	0.4368	(2) slm = 0
				R-squared	=	0.4866	(3) lsm = 0
				Adj R-squared	=	0.0281	(4) lms = 0
Total	59990.1598	53	1131.88981	Root MSE	=	33.167	(5) mls = 0

accuracy_bird	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	9.923922	14.88192	0.67	0.510	-20.56031	40.40816
logActSco	-32.45932	16.03382	-2.02	0.053	-65.30311	.3844646
msl	8.910138	21.2028	0.42	0.678	-34.52183	52.34211
slm	25.484	27.06829	0.94	0.355	-29.96289	80.93088
lsm	41.46734	20.29791	2.04	0.051	-.1110347	83.04572
lms	18.98086	21.69759	0.87	0.389	-25.46464	63.42635
mls	27.1275	21.73037	1.25	0.222	-17.38515	71.64014
age	-.8063643	.7609198	-1.06	0.298	-2.365038	.7523093
male	.8497028	18.98016	0.04	0.965	-38.0294	39.7288
female	7.110119	21.62413	0.33	0.745	-37.18491	51.40515
black_or_africanamerican	66.72075	34.3542	1.94	0.062	-3.650635	137.0921
hispanic_or_latnix	17.01262	43.11474	0.39	0.696	-71.30393	105.3292
asian_or_pacificislander	-4.703642	43.26542	-0.11	0.914	-93.32885	83.92156
white	4.243399	33.25013	0.13	0.899	-63.86641	72.35321
completed_graduate_degree	-2.845055	38.58505	-0.07	0.942	-81.88294	76.19283
completed_bachelors_degree	-28.46234	37.48376	-0.76	0.454	-105.2443	48.31965
current_undergrad	-15.5453	35.12006	-0.44	0.661	-87.48548	56.39488
high_school_diploma	-26.50126	39.01692	-0.68	0.503	-106.4238	53.42127
incomplete_high_school	-42.75856	77.24975	-0.55	0.584	-200.9975	115.4804
current_graduatestu	5.784874	43.38689	0.13	0.895	-83.08913	94.65888
logAnnInc	3.50538	6.132917	0.57	0.572	-9.057332	16.06809
logEssSpe	-1.719862	6.379845	-0.27	0.789	-14.78838	11.34866
logNEssSpe	1.283684	5.29303	0.24	0.810	-9.558596	12.12596
charity_past	15.93713	40.52092	0.39	0.697	-67.0662	98.94047
charity_future	-13.68042	21.45875	-0.64	0.529	-57.63668	30.27584
_cons	-42.15555	81.48322	-0.52	0.609	-209.0663	124.7553

F(5, 28) =	1.18
Prob > F =	0.3446

The regression seen in Figure 10 has an R-squared value of 0.487 which is better than the log-linear regression model, but slightly worse than the linear-linear regression model. In this model, there are no significant variables as all have t-scores above the critical value of 1.96 and p-values below the critical value of 0.05. Additionally, the form type is not significant.

FIGURE 11: Accuracy for Birds Log-Log Regression Model

Source	SS	df	MS	Number of obs	=	47
Model	212.017025	25	8.480681	F(25, 21)	=	1.44
Residual	123.46468	21	5.87927049	Prob > F	=	0.1986
				R-squared	=	0.6320
				Adj R-squared	=	0.1939
Total	335.481705	46	7.29308055	Root MSE	=	2.4247

logAccBird	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	1.997192	1.354835	1.47	0.155	-.8203411	4.814726
logActSco	-2.241399	1.294431	-1.73	0.098	-4.933317	.4505182
msl	.6244443	1.848924	0.34	0.739	-3.220603	4.469492
slm	1.824678	2.416129	0.76	0.459	-3.199936	6.849293
lsm	.9538382	1.9979	0.48	0.638	-3.201022	5.108699
lms	.906763	1.961357	0.46	0.649	-3.172103	4.985629
mls	4.313914	1.909713	2.26	0.035	.3424477	8.28538
age	-.0300483	.0734026	-0.41	0.686	-.1826973	.1226008
male	-1.671888	1.43378	-1.17	0.257	-4.653596	1.30982
female	-.9585592	1.609252	-0.60	0.558	-4.305181	2.388063
black_or_africanamerican	1.672254	2.916624	0.57	0.572	-4.393198	7.737707
hispanic_or_latnix	-6.40283	4.629719	-1.38	0.181	-16.03086	3.225197
asian_or_pacificislander	-3.395672	3.710784	-0.92	0.371	-11.11267	4.321326
white	-2.359901	2.787242	-0.85	0.407	-8.156289	3.436487
completed_graduate_degree	-.0390465	4.397529	-0.01	0.993	-9.184208	9.106115
completed_bachelors_degree	-2.055524	4.392776	-0.47	0.645	-11.1908	7.079755
current_undergrad	-.9064357	3.916052	-0.23	0.819	-9.050313	7.237441
high_school_diploma	.3154014	4.235516	0.07	0.941	-8.492837	9.12364
incomplete_high_school	-5.668148	6.738067	-0.84	0.410	-19.68073	8.344429
current_graduategstu	-2.417283	4.678551	-0.52	0.611	-12.14686	7.312297
logAnnInc	-.6720118	.5112259	-1.31	0.203	-1.735164	.3911408
logEssSpe	-.7322098	.5654079	-1.30	0.209	-1.90804	.4436202
logNEssSpe	1.09437	.4490617	2.44	0.024	.1604949	2.028245
charity_past	3.808791	3.290118	1.16	0.260	-3.033384	10.65097
charity_future	1.218737	2.119937	0.57	0.571	-3.189914	5.627388
_cons	.0501115	6.746951	0.01	0.994	-13.98094	14.08116

(1)	msl = 0
(2)	slm = 0
(3)	lsm = 0
(4)	lms = 0
(5)	mls = 0

F(5, 21) =	1.92
Prob > F =	0.1336

Figure 11 shows a poorly-fitted model where the variable 'logNEssSpe' is significant.

This variable is the self-reported money spent on non-essential things every month.

However, due to the R-squared value of 0.632, I am not confident that any impactful conclusion can be drawn from this correlation. Additionally, the form-type is once again, not significant.

FIGURE 12: Accuracy Score for Turtles Linear-Linear Regression Model

Source	SS	df	MS	Number of obs	=	56	(1) msl = 0
Model	66062366.3	25	2642494.65	F(25, 30)	=	1.05	(2) slm = 0
Residual	75273619.6	30	2509120.65	Prob > F	=	0.4421	(3) lsm = 0
				R-squared	=	0.4674	(4) lms = 0
				Adj R-squared	=	0.0236	(5) mls = 0
Total	141335986	55	2569745.2	Root MSE	=	1584	

accuracy_turtle	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	203.5939	673.9458	0.30	0.765	-1172.787	1579.975
activity_score	-2300.624	1312.564	-1.75	0.090	-4981.238	379.9892
msl	258.2219	1018.493	0.25	0.802	-1821.818	2338.262
slm	961.5671	1229.515	0.78	0.440	-1549.437	3472.571
lsm	1816.803	967.9216	1.88	0.070	-159.9564	3793.563
lms	406.0081	1002.167	0.41	0.688	-1640.689	2452.706
mls	851.1637	977.4346	0.87	0.391	-1145.024	2847.352
age	-44.86621	34.49464	-1.30	0.203	-115.3137	25.58123
male	19.58356	846.4548	0.02	0.982	-1709.108	1748.275
female	292.5893	929.9194	0.31	0.755	-1606.559	2191.738
black_or_africanamerican	3616.037	1842.013	1.96	0.059	-145.8554	7377.929
hispanic_or_latnix	1005.303	2073.91	0.48	0.631	-3230.187	5240.793
asian_or_pacificislander	107.4012	1928.865	0.06	0.956	-3831.868	4046.67
white	666.267	1666.161	0.40	0.692	-2736.488	4069.022
completed_graduate_degree	249.0075	1695.038	0.15	0.884	-3212.722	3710.737
completed_bachelors_degree	-1151.244	1671.32	-0.69	0.496	-4564.534	2262.047
current_undergrad	-633.0571	1630.016	-0.39	0.700	-3961.994	2695.879
high_school_diploma	-1074.636	1788.87	-0.60	0.553	-4727.996	2578.724
incomplete_high_school	-2318.414	2815.167	-0.82	0.417	-8067.753	3430.925
current_graduatestu	746.2108	2109.348	0.35	0.726	-3561.652	5054.073
annual_income	.0023381	.0022742	1.03	0.312	-.0023064	.0069826
ess_spend	.0001031	.0022211	0.05	0.963	-.0044331	.0046392
noness_spend	-.0074751	.0146188	-0.51	0.613	-.0373306	.0223804
charity_past	725.2012	1838.269	0.39	0.696	-3029.046	4479.448
charity_future	-548.4603	1011.877	-0.54	0.592	-2614.989	1518.069
_cons	1566.165	2342.052	0.67	0.509	-3216.943	6349.274

F(5, 30) =	1.09
Prob > F =	0.3846

Figure 12 shows no significant variables - either the t-score is less than 1.96 or the p-value is greater than 0.05 or both. Additionally, the joint-significance test for form-type shows that the order in which we asked the questions did not have a significant effect in this model. The R-squared value of 0.467 could be better, so different regression models were tested just like for birds.

FIGURE 13: Accuracy for Turtles Log-Linear Regression Model

Source	SS	df	MS	Number of obs	=	49	
				F(25, 23)	=	1.02	(1) msl = 0
Model	143.308956	25	5.73235824	Prob > F	=	0.4837	(2) slm = 0
Residual	129.326018	23	5.62287035	R-squared	=	0.5256	(3) lsm = 0
				Adj R-squared	=	0.0100	(4) lms = 0
Total	272.634974	48	5.67989529	Root MSE	=	2.3713	(5) mls = 0

logAccTurtle	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	1.351119	1.191712	1.13	0.269	-1.114125	3.816363
activity_score	-3.214001	2.220769	-1.45	0.161	-7.808011	1.380009
msl	1.000688	1.585374	0.63	0.534	-2.278909	4.280284
slm	2.094692	2.01636	1.04	0.310	-2.076465	6.26585
lsm	1.324814	1.669128	0.79	0.435	-2.128039	4.777668
lms	.1331214	1.604592	0.08	0.935	-3.18623	3.452473
mls	1.852582	1.591553	1.16	0.256	-1.439796	5.14496
age	-.0129828	.0574347	-0.23	0.823	-.1317956	.1058299
male	-.768191	1.35264	-0.57	0.576	-3.56634	2.029958
female	-.6425891	1.475205	-0.44	0.667	-3.694283	2.409105
black_or_africanamerican	.48089	2.841332	0.17	0.867	-5.396852	6.358632
hispanic_or_latnix	-1.49446	4.407812	-0.34	0.738	-10.61271	7.623793
asian_or_pacificislander	-1.206148	3.006153	-0.40	0.692	-7.424849	5.012554
white	-1.658287	2.543553	-0.65	0.521	-6.920028	3.603453
completed_graduate_degree	2.91928	4.062348	0.72	0.480	-5.484327	11.32289
completed_bachelors_degree	.5869016	4.026796	0.15	0.885	-7.743161	8.916964
current_undergrad	.3374147	3.78949	0.09	0.930	-7.501743	8.176572
high_school_diploma	1.331002	4.206225	0.32	0.755	-7.370236	10.03224
incomplete_high_school	-2.20111	5.102559	-0.43	0.670	-12.75656	8.354336
current_graduatestu	-.6500828	4.497045	-0.14	0.886	-9.952929	8.652764
annual_income	-2.19e-06	4.19e-06	-0.52	0.606	-.0000109	6.48e-06
ess_spend	-3.93e-06	3.47e-06	-1.13	0.270	-.0000111	3.26e-06
noness_spend	.0000145	.000022	0.66	0.516	-.0000311	.0000602
charity_past	2.708809	3.180653	0.85	0.403	-3.870873	9.28849
charity_future	.6405126	2.171157	0.30	0.771	-3.850869	5.131894
_cons	-1.20518	4.248219	-0.28	0.779	-9.993292	7.582931

F(5, 23) =	0.60
Prob > F =	0.6991

Figure 13 shows an R-squared value of 0.526 which is higher than the linear-linear model shown in Figure 12. There are no significant variables in this model. The form-type is also not significant.

FIGURE 14: Accuracy for Turtles Linear-Log Regression Model

Source	SS	df	MS	Number of obs	=	54
Model	68818312.4	25	2752732.49	F(25, 28)	=	1.06
Residual	72419492.4	28	2586410.44	Prob > F	=	0.4340
				R-squared	=	0.4873
				Adj R-squared	=	0.0294
Total	141237805	53	2664864.24	Root MSE	=	1608.2

accuracy_turtle	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	467.2425	721.6121	0.65	0.523	-1010.913	1945.398
logActSco	-1568.343	777.4666	-2.02	0.053	-3160.911	24.22489
msl	447.6921	1028.106	0.44	0.667	-1658.288	2553.672
slm	1249.061	1312.519	0.95	0.349	-1439.513	3937.634
lsm	2021.836	984.2288	2.05	0.049	5.734816	4037.937
lms	909.2699	1052.098	0.86	0.395	-1245.856	3064.395
mls	1277.395	1053.688	1.21	0.236	-880.9863	3435.776
age	-38.9048	36.89637	-1.05	0.301	-114.4836	36.67399
male	54.96929	920.3324	0.06	0.953	-1830.246	1940.185
female	346.3308	1048.536	0.33	0.744	-1801.499	2494.16
black_or_africanamerican	3268.646	1665.807	1.96	0.060	-143.6042	6680.896
hispanic_or_latnix	933.7041	2090.598	0.45	0.659	-3348.692	5216.1
asian_or_pacificislander	-223.242	2097.905	-0.11	0.916	-4520.605	4074.121
white	253.7999	1612.271	0.16	0.876	-3048.788	3556.388
completed_graduate_degree	-152.6904	1870.957	-0.08	0.936	-3985.172	3679.791
completed_bachelors_degree	-1414.315	1817.556	-0.78	0.443	-5137.41	2308.781
current_undergrad	-756.3885	1702.943	-0.44	0.660	-4244.708	2731.931
high_school_diploma	-1342.676	1891.898	-0.71	0.484	-5218.054	2532.701
incomplete_high_school	-2003.728	3745.776	-0.53	0.597	-9676.603	5669.147
current_graduatestu	305.2902	2103.794	0.15	0.886	-4004.137	4614.717
logAnnInc	185.8105	297.3801	0.62	0.537	-423.345	794.966
logEssSpe	-82.39654	309.3534	-0.27	0.792	-716.0783	551.2852
logNEssSpe	55.42194	256.6546	0.22	0.831	-470.3112	581.1551
charity_past	798.3225	1964.826	0.41	0.688	-3226.441	4823.086
charity_future	-654.6818	1040.517	-0.63	0.534	-2786.085	1476.721
_cons	-2257.415	3951.054	-0.57	0.572	-10350.78	5835.952

(1)	msl = 0
(2)	slm = 0
(3)	lsm = 0
(4)	lms = 0
(5)	mls = 0

F(5, 28) =	1.17
Prob > F =	0.3491

Figure 14 has an R-squared value of 0.487 which is lower than the log-linear model, but higher than the linear-linear model. In this model, there are no significant variables and the form-type is not jointly-significant.

FIGURE 15: Accuracy for Turtles Log-Log Regression Model

Source	SS	df	MS	Number of obs	=	47	
Model	180.085363	25	7.20341454	F(25, 21)	=	1.66	(1) msl = 0
Residual	90.9860421	21	4.33266867	Prob > F	=	0.1202	(2) slm = 0
				R-squared	=	0.6643	(3) lsm = 0
				Adj R-squared	=	0.2648	(4) lms = 0
Total	271.071406	46	5.89285664	Root MSE	=	2.0815	(5) mls = 0

logAccTurtle	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	1.995626	1.117935	1.79	0.089	-.3292462	4.320498
logActSco	-2.11451	1.121414	-1.89	0.073	-4.446619	.2175992
msl	1.730633	1.379636	1.25	0.223	-1.138477	4.599743
slm	3.273706	1.831316	1.79	0.088	-.5347228	7.082136
lsm	1.614652	1.437858	1.12	0.274	-1.375539	4.604842
lms	.9119443	1.467462	0.62	0.541	-2.139809	3.963698
mls	3.388437	1.483621	2.28	0.033	.3030786	6.473796
age	-.0258573	.0530687	-0.49	0.631	-.1362198	.0845052
male	-.9527688	1.250141	-0.76	0.454	-3.55258	1.647042
female	-.2811015	1.432017	-0.20	0.846	-3.259143	2.69694
black_or_africanamerican	-.3557943	2.257886	-0.16	0.876	-5.051325	4.339737
hispanic_or_latnix	-5.424208	4.380958	-1.24	0.229	-14.53491	3.686492
asian_or_pacificislander	-4.134926	3.004892	-1.38	0.183	-10.38394	2.114089
white	-3.369449	2.215517	-1.52	0.143	-7.976868	1.23797
completed_graduate_degree	.5597183	3.74237	0.15	0.883	-7.222966	8.342402
completed_bachelors_degree	-1.259781	3.705797	-0.34	0.737	-8.966408	6.446847
current_undergrad	-1.024625	3.354281	-0.31	0.763	-8.000235	5.950984
high_school_diploma	.5809849	3.775408	0.15	0.879	-7.270406	8.432375
incomplete_high_school	-5.555745	5.542428	-1.00	0.328	-17.08185	5.970364
current_graduatestu	-2.26056	3.973921	-0.57	0.575	-10.52478	6.003661
logAnnInc	-.487912	.4831795	-1.01	0.324	-1.492739	.5169148
logEssSpe	-.7490753	.4413037	-1.70	0.104	-1.666817	.168666
logNEssSpe	1.167161	.385447	3.03	0.006	.3655801	1.968742
charity_past	3.727913	2.889256	1.29	0.211	-2.280624	9.73645
charity_future	.8143469	1.987676	0.41	0.686	-3.319251	4.947945
_cons	.7576473	6.008095	0.13	0.901	-11.73687	13.25216

F(5, 21) =	1.55
Prob > F =	0.2182

Figure 15 shows an R-squared value of 0.664 for the log-log regression model. There are no significant variables and the form-type is not significant.

FIGURE 16: Accuracy Score for Humans Linear-Linear Regression Model

Source	SS	df	MS	Number of obs	=	56	
Model	1.1479e+11	25	4.5917e+09	F(25, 30)	=	1.07	(1) msl = 0
Residual	1.2933e+11	30	4.3111e+09	Prob > F	=	0.4305	(2) slm = 0
				R-squared	=	0.4702	(3) lsm = 0
				Adj R-squared	=	0.0287	(4) lms = 0
Total	2.4413e+11	55	4.4387e+09	Root MSE	=	65659	(5) mls = 0

accuracy_human	Coefficient	Std. err.	t	P> t	[95% conf. interval]		
math_activity	8515.35	27935.6	0.30	0.763	-48536.76	65567.46	F(5, 30) = 1.08
activity_score	-94429.09	54406.85	-1.74	0.093	-205542.7	16684.53	Prob > F = 0.3906
msl	9214.129	42217.36	0.22	0.829	-77005.22	95433.47	
slm	38581.06	50964.39	0.76	0.455	-65502.11	142664.2	
lsm	74156.38	40121.14	1.85	0.074	-7781.918	156094.7	
lms	15894.77	41540.63	0.38	0.705	-68942.52	100732.1	
mls	34242.58	40515.46	0.85	0.405	-48501.03	116986.2	
age	-1873.294	1429.831	-1.31	0.200	-4793.398	1046.81	
male	976.3334	35086.24	0.03	0.978	-70679.33	72632	
female	12007	38545.92	0.31	0.758	-66714.27	90728.26	
black_or_africanamerican	153995.8	76352.94	2.02	0.053	-1937.665	309929.3	
hispanic_or_latnix	42639.81	85965.28	0.50	0.624	-132924.7	218204.3	
asian_or_pacificislander	6091.672	79953.05	0.08	0.940	-157194.2	169377.6	
white	29078.99	69063.73	0.42	0.677	-111968	170126	
completed_graduate_degree	10138.53	70260.7	0.14	0.886	-133353	153630	
completed_bachelors_degree	-47173.09	69277.58	-0.68	0.501	-188656.8	94310.6	
current_undergrad	-26487.44	67565.49	-0.39	0.698	-164474.6	111499.7	
high_school_diploma	-44146.93	74150.12	-0.60	0.556	-195581.7	107287.8	
incomplete_high_school	-95682.9	116691	-0.82	0.419	-333997.7	142631.9	
current_graduatestu	30920.98	87434.18	0.35	0.726	-147643.4	209485.4	
annual_income	.0966818	.0942659	1.03	0.313	-.0958348	.2891984	
ess_spend	.0063248	.0920668	0.07	0.946	-.1817007	.1943504	
noness_spend	-.2975383	.6059595	-0.49	0.627	-1.535073	.939996	
charity_past	29622.57	76197.76	0.39	0.700	-125994	185239.2	
charity_future	-21719.88	41943.13	-0.52	0.608	-107379.2	63939.43	
_cons	63415.41	97079.97	0.65	0.519	-134848.3	261679.1	

Figure 16 shows an R-squared value of 0.47 which could be better. The same testing of different models was done for humans just like for birds and turtles. In this model, there are no significant variables and the form-type is not significant.

FIGURE 17: Accuracy for Humans Log-Linear Regression Model

Source	SS	df	MS	Number of obs	=	51	(1) msl = 0
Model	302.984557	25	12.1193823	F(25, 25)	=	2.55	(2) slm = 0
Residual	118.856937	25	4.75427749	Prob > F	=	0.0114	(3) lsm = 0
				R-squared	=	0.7182	(4) lms = 0
				Adj R-squared	=	0.4365	(5) mls = 0
Total	421.841494	50	8.43682988	Root MSE	=	2.1804	

logAccHuman	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	-.615857	1.023163	-0.60	0.553	-2.723101	1.491387
activity_score	-2.321542	1.99075	-1.17	0.255	-6.421567	1.778484
msl	-.3263497	1.464276	-0.22	0.825	-3.342082	2.689382
slm	3.698738	1.733581	2.13	0.043	.1283613	7.269115
lsm	3.45532	1.414527	2.44	0.022	.5420465	6.368593
lms	2.231372	1.49068	1.50	0.147	-.8387417	5.301485
mls	1.970899	1.46504	1.35	0.191	-1.046408	4.988206
age	-.1486152	.0605512	-2.45	0.021	-.2733227	-.0239077
male	.7189088	1.226242	0.59	0.563	-1.806585	3.244402
female	.3310105	1.335051	0.25	0.806	-2.418579	3.0806
black_or_africanamerican	4.566173	2.714983	1.68	0.105	-1.02544	10.15779
hispanic_or_latnix	1.93884	3.121078	0.62	0.540	-4.489141	8.366822
asian_or_pacificislander	1.440407	2.772054	0.52	0.608	-4.268744	7.149558
white	-.5893536	2.32715	-0.25	0.802	-5.382208	4.203501
completed_graduate_degree	1.67135	2.550461	0.66	0.518	-3.581421	6.924122
completed_bachelors_degree	-1.240227	2.412642	-0.51	0.612	-6.209157	3.728703
current_undergrad	-3.371748	2.384928	-1.41	0.170	-8.2836	1.540105
high_school_diploma	-2.771144	3.05489	-0.91	0.373	-9.062808	3.52052
incomplete_high_school	-7.696371	4.017848	-1.92	0.067	-15.97128	.578542
current_graduatestu	-1.409274	3.052051	-0.46	0.648	-7.69509	4.876542
annual_income	4.98e-06	3.76e-06	1.32	0.197	-2.77e-06	.0000127
ess_spend	6.90e-07	3.33e-06	0.21	0.838	-6.17e-06	7.55e-06
noness_spend	.0000341	.0000202	1.69	0.103	-7.37e-06	.0000757
charity_past	2.793822	2.729259	1.02	0.316	-2.827191	8.414836
charity_future	-.6031866	1.92174	-0.31	0.756	-4.561085	3.354711
_cons	5.4296	3.753479	1.45	0.160	-2.300835	13.16004

F(5, 25) =	3.06
Prob > F =	0.0274

Figure 17 shows one significant variable, ‘age’, and form-type turns out to be jointly-significant. Unfortunately, with an R-squared value of 0.718, this is a poor fit for the data. This leads me to the same lack of confidence in a compelling conclusion as before. However, if we ignored the R-squared value these results would imply that age and the order in which we asked the questions has a statistically significant correlation with the dependent variable ‘logAccHuman’.

FIGURE 18: Accuracy for Humans Linear-Log Regression Model

Source	SS	df	MS	Number of obs	=	54	(1)	msl = 0
Model	1.1965e+11	25	4.7859e+09	F(25, 28)	=	1.08	(2)	slm = 0
Residual	1.2430e+11	28	4.4393e+09	Prob > F	=	0.4212	(3)	lsm = 0
				R-squared	=	0.4905	(4)	lms = 0
				Adj R-squared	=	0.0355	(5)	mls = 0
Total	2.4395e+11	53	4.6028e+09	Root MSE	=	66628		

accuracy_human	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	19391.78	29896.08	0.65	0.522	-41847.56	80631.13
logActSco	-64421.14	32210.11	-2.00	0.055	-130400.6	1558.273
msl	17037.7	42594	0.40	0.692	-70212.17	104287.6
slm	50712.63	54377.11	0.93	0.359	-60673.83	162099.1
lsm	82907.64	40776.18	2.03	0.052	-618.5685	166433.9
lms	36809.87	43587.98	0.84	0.406	-52476.05	126095.8
mls	51960.86	43653.83	1.19	0.244	-37459.95	141381.7
age	-1649.684	1528.601	-1.08	0.290	-4780.881	1481.513
male	2304.945	38128.98	0.06	0.952	-75798.72	80408.61
female	14190.86	43440.41	0.33	0.746	-74792.79	103174.5
black_or_africanamerican	139046.2	69013.66	2.01	0.054	-2321.873	280414.3
hispanic_or_latnix	39139.41	86612.59	0.45	0.655	-138278.4	216557.3
asian_or_pacificislander	-8057.959	86915.3	-0.09	0.927	-186095.9	169980
white	11453.95	66795.72	0.17	0.865	-125370.9	148278.8
completed_graduate_degree	-7513.425	77512.95	-0.10	0.923	-166291.5	151264.7
completed_bachelors_degree	-58637.53	75300.58	-0.78	0.443	-212883.8	95608.72
current_undergrad	-32330.6	70552.19	-0.46	0.650	-176850.2	112189
high_school_diploma	-55560.13	78380.53	-0.71	0.484	-216115.4	104995.1
incomplete_high_school	-80804.02	155185.9	-0.52	0.607	-398688	237079.9
current_graduatestu	12246.89	87159.3	0.14	0.889	-166290.8	190784.6
logAnnInc	7583.461	12320.33	0.62	0.543	-17653.59	32820.51
logEssSpe	-3066.769	12816.38	-0.24	0.813	-29319.93	23186.4
logNEssSpe	2548.341	10633.09	0.24	0.812	-19232.56	24329.24
charity_past	33651.26	81401.89	0.41	0.682	-133093	200395.5
charity_future	-26112.23	43108.18	-0.61	0.550	-114415.3	62190.88
_cons	-96135.82	163690.5	-0.59	0.562	-431440.6	239168.9

F(5, 28) =	1.16
Prob > F =	0.3511

Figure 18 shows a much better fit than the model in Figure 17 with an R-squared value of 0.491, but this is still a worse fit than the linear-linear model seen in Figure 16. In this model there are no significant variables and the form-type is not significant.

FIGURE 19: Accuracy for Humans Log-Log Regression Model

Source	SS	df	MS	Number of obs	=	49	(1) msl = 0
Model	325.419995	25	13.0167998	F(25, 23)	=	3.17	(2) slm = 0
Residual	94.4688368	23	4.10734073	Prob > F	=	0.0035	(3) lsm = 0
				R-squared	=	0.7750	(4) lms = 0
				Adj R-squared	=	0.5305	(5) mls = 0
Total	419.888832	48	8.747684	Root MSE	=	2.0267	

logAccHuman	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
math_activity	-1.003437	.9918516	-1.01	0.322	-3.055238	1.048364
logActSco	-1.096761	1.039751	-1.05	0.302	-3.24765	1.054128
msl	-.5363466	1.401514	-0.38	0.705	-3.435598	2.362905
slm	4.112183	1.721761	2.39	0.026	.5504486	7.673916
lsm	3.824753	1.369676	2.79	0.010	.9913619	6.658144
lms	2.669569	1.523124	1.75	0.093	-.4812522	5.820391
mls	1.972661	1.485417	1.33	0.197	-1.100158	5.04548
age	-.2008611	.055257	-3.64	0.001	-.315169	-.0865533
male	.8776305	1.218723	0.72	0.479	-1.643489	3.39875
female	.1792185	1.374614	0.13	0.897	-2.664388	3.022825
black_or_africanamerican	4.816417	2.19349	2.20	0.038	.2788375	9.353996
hispanic_or_latnix	1.610761	3.052877	0.53	0.603	-4.704597	7.926119
asian_or_pacificislander	1.864519	2.887918	0.65	0.525	-4.109594	7.838632
white	-.3633658	2.206486	-0.16	0.871	-4.927831	4.201099
completed_graduate_degree	.8688461	2.501619	0.35	0.732	-4.306147	6.043839
completed_bachelors_degree	-1.571433	2.376121	-0.66	0.515	-6.486813	3.343946
current_undergrad	-4.034984	2.250505	-1.79	0.086	-8.690509	.6205414
high_school_diploma	-2.427798	2.872743	-0.85	0.407	-8.370521	3.514924
incomplete_high_school	-3.214788	5.236455	-0.61	0.545	-14.04722	7.617645
current_graduatestu	-1.332275	2.743634	-0.49	0.632	-7.007914	4.343363
logAnnInc	.0013849	.4234105	0.00	0.997	-.8745065	.8772763
logEssSpe	.4969056	.4115065	1.21	0.240	-.3543605	1.348172
logNEssSpe	.4511853	.3657644	1.23	0.230	-.305456	1.207827
charity_past	4.370695	2.678347	1.63	0.116	-1.169888	9.911277
charity_future	-.9732251	1.799999	-0.54	0.594	-4.696807	2.750356
_cons	-2.120864	5.851036	-0.36	0.720	-14.22465	9.982926

F(5, 23) =	4.23
Prob > F =	0.0071

Figure 19 shows another poorly-fit model with an R-squared value of 0.775. However, if we ignore this, we see that ‘age’, ‘black_or_africanamerican’ are significant variables and form-type is jointly-significant. Again, it is difficult to jump to any compelling conclusions due to the poor fit, but worth mentioning.

Appendix A

```

/*****

```

```

ECON4803: Behavioral Economics - Scope Sensitivity Semester Project
@author Ethan Nguyen-Tu and Jacqueline Chambers
@version 1.0.2
@date 22 November 2022

```

```

*****/

```

```

clear
set more off
*Working Directory
capture cd "\\Client\C$\Users\jacki\OneDrive\Desktop\Documents\Georgia Tech\Fall
2022\ECON 4803 - Behavioral Econ\Project\STATA"
use ScopeSensitivityData.dta, clear

```

```

clear
capture cd "C:\Users\enguyentu3\Downloads\ScopeSensitivity"
import excel "ScopeSensitivityResults.xls", firstrow case(preserve)

```

```

**# CLEAN DATA #**

```

```

describe
summarize
* check gender count
count if black_or_africanamerican == 1 // 6
count if hispanic_or_latnix == 1 // 5
count if asian_or_pacificislander == 1 // 12
count if white == 1 // 46
* check education count
count if completed_graduate_degree == 1 // 20
count if completed_bachelors_degree == 1 // 19
count if current_undergrad == 1 // 23
count if high_school_diploma == 1 // 4
count if incomplete_high_school == 1 // 1
count if current_graduatestu == 1 // 2
count if other_education == 1 // 5
// Combine high_school_diploma, incomplete_high_school, and current_graduatestu with
other_education
generate other_education2 = other_education + incomplete_high_school +
current_graduatestu + high_school_diploma
count if other_education2 == 1 // 12
* check charity count
count if charity_past == 1 // 66
count if charity_future == 1 // 53

```

****# REGRESSION #****

**** Overall Accuracy Score Regression Framework ****

/* Figure 1

DEPENDENT VARIABLE: accuracy_score

Variables Left Out:

Form Type: sml

Gender: other_gender

Ethnicity: other_race

Education: other_education

***/**

reg accuracy_score math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future

*** Test form type significance**

test msl slm lsm lms mls // msl slm lsm lms mls are are not jointly significant

di invFtail(5, 30, .05) // 2.5335545

/* Figure 2

DEPENDENT VARIABLE: accuracy_score

Variables Left Out:

Form Type: all

Gender: other_gender

Ethnicity: other_race

Education: other_education

***/**

reg accuracy_score math_activity activity_score male female black_or_africanamerican
hispanic_or_latnix asian_or_pacificislander white completed_graduate_degree
completed_bachelors_degree current_undergrad high_school_diploma
incomplete_high_school current_graduatestu annual_income ess_spend noness_spend
charity_past charity_future

/* Figure 3

DEPENDENT VARIABLE: accuracy_score

Variables Left Out:

Form Type: all

Gender: other_gender

Ethnicity: other_race

Education: other_education2

***/**

```
reg accuracy_score math_activity activity_score male female black_or_africanamerican
hispanic_or_latnix asian_or_pacificislander white completed_graduate_degree
completed_bachelors_degree current_undergrad annual_income ess_spend noness_spend
charity_past charity_future
```

```
* Test charity variables significance
test charity_past charity_future
di invFtail(2, 39, .05) // 3.2380961
```

```
/* Figure 4
DEPENDENT VARIABLE: accuracy_score
Variables Left Out:
  Form Type: all
  Gender: other_gender
  Ethnicity: other_race
  Education: other_education2
  Charity: charity_past & charity_future
*/
reg accuracy_score math_activity activity_score male female black_or_africanamerican
hispanic_or_latnix asian_or_pacificislander white completed_graduate_degree
completed_bachelors_degree current_undergrad annual_income ess_spend noness_spend

test ess_spend noness_spend
di invFtail(2, 52, .05) // 3.175141
```

```
/* Figure 5
DEPENDENT VARIABLE: accuracy_score
Variables Left Out:
  Form Type: all
  Gender: other_gender
  Ethnicity: other_race
  Education: other_education2
  Charity: charity_past & charity_future
  Spending: ess_spend & noness_spend
*/
reg accuracy_score math_activity activity_score male female black_or_africanamerican
hispanic_or_latnix asian_or_pacificislander white completed_graduate_degree
completed_bachelors_degree current_undergrad annual_income
```

```
* Test Ethnicity
test black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
di invFtail(4, 54, .05) // 2.5429175
```

```
* Test Education
test completed_graduate_degree completed_bachelors_degree current_undergrad
di invFtail(3, 54, .05) // 2.7757624
```

```
* Test Gender
test male female
```

```
di invFtail(2, 54, .05) // 3.168246
```

```
/* Check Regression 1
DEPENDENT VARIABLE: accuracy_score
Variables Left Out:
  Form Type: all
  Gender: all
  Ethnicity: other_race
  Education: other_education2
  Charity: all
  Spending: all
*/
reg accuracy_score math_activity activity_score black_or_africanamerican hispanic_or_latnix
asian_or_pacificislander white completed_graduate_degree completed_bachelors_degree
current_undergrad annual_income
```

```
/* Figure 6
DEPENDENT VARIABLE: accuracy_score
Variables Left Out:
  Form Type: all
  Gender: all
  Ethnicity: other_race
  Education: all
  Charity: all
  Spending:all
*/
reg accuracy_score math_activity activity_score black_or_africanamerican hispanic_or_latnix
asian_or_pacificislander white annual_income
```

```
* Test Ethnicity
test black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
di invFtail(4, 59, .05) // 2.5279066
```

```
* Figure 7 - Base Regression
reg accuracy_score math_activity activity_score
```

```
/* Overall Accuracy Score Conclusion
Cannot conclude significance.
*/
```

```
** Bird Regression Framework **
```

```
* linear-linear model
* variables left out: sml, other_gender, other_race, other_education
* dependent var: accuracy_bird
```



```
reg accuracy_bird math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future
```

* Test 'form type' significance

```
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

* log-linear model

* independent vars: no change

* dependent var: logAccBird

```
generate logAccBird = ln(accuracy_bird)
```

```
reg logAccBird math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future
```

* Test 'form type' significance

```
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

* linear-log model & log-log model

/* independent vars:

logActSco - newly generated

logAnnInc - newly generated

logEssSpe - newly generated

logNEssSpe - newly generated

*/

```
generate logActSco = ln(activity_score)
```

```
generate logAnnInc = ln(annual_income)
```

```
generate logEssSpe = ln(ess_spend)
```

```
generate logNEssSpe = ln(noness_spend)
```

* dependent var: accuracy_bird

```
reg accuracy_bird math_activity logActSco msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu logAnnInc logEssSpe
logNEssSpe charity_past charity_future
```

* Test 'form type' significance

```
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

```
* dependent var: logAccBird
reg logAccBird math_activity logActSco msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu logAnnInc logEssSpe
logNEssSpe charity_past charity_future
```

```
* Test 'form type' significance
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

```
** Turtle Regression Framework **
```

```
* linear-linear model
* independent variables left out: sml, other_gender, other_race, other_education
* dependent var: accuracy_turtle
reg accuracy_turtle math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future
```

```
* Test 'form type' significance
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

```
* log-linear model
* independent vars: no change
* dependent var: logAccTurtle
generate logAccTurtle = ln(accuracy_turtle)
reg logAccTurtle math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future
```

```
* Test 'form type' significance
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

```
* linear-log & log-log
* independent vars: no change
* dependent var: accuracy_turtle
```

```
reg accuracy_turtle math_activity logActSco msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu logAnnInc logEssSpe
logNEssSpe charity_past charity_future
```

* Test 'form type' significance

```
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

* dependent var: logAccTurtle

```
reg logAccTurtle math_activity logActSco msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu logAnnInc logEssSpe
logNEssSpe charity_past charity_future
```

* Test 'form type' significance

```
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

** Human Regression Framework **

* linear-linear model

* variables left out: sml, other_gender, other_race, other_education

* dependent var: accuracy_human

```
reg accuracy_human math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future
```

* Test 'form type' significance

```
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression
```

* log-linear model

* independent vars: no change

* dependent var: logAccHuman

```
generate logAccHuman = ln(accuracy_human)
```

```
reg logAccHuman math_activity activity_score msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu annual_income ess_spend
noness_spend charity_past charity_future
```

```

* Test 'form type' significance
test msl slm lsm lms mls // msl slm lsm lms mls are jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is significant in this regression!

* linear-log & log-log
* independent vars: no change
* dependent var: accuracy_human
reg accuracy_human math_activity logActSco msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu logAnnInc logEssSpe
logNEssSpe charity_past charity_future

* Test 'form type' significance
test msl slm lsm lms mls // msl slm lsm lms mls are not jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is not significant in this regression

* dependent var: logAccHuman
reg logAccHuman math_activity logActSco msl slm lsm lms mls age male female
black_or_africanamerican hispanic_or_latnix asian_or_pacificislander white
completed_graduate_degree completed_bachelors_degree current_undergrad
high_school_diploma incomplete_high_school current_graduatestu logAnnInc logEssSpe
logNEssSpe charity_past charity_future

* Test 'form type' significance
test msl slm lsm lms mls // msl slm lsm lms mls are jointly significant
di invFtail(5, 30, .05) // 2.5335545
// form type is significant in this regression!

// Uncomment below if new variables have been added or variables have been modified
*export excel using "ScopeSensitivityResults.xls", firstrow(variables) keepcellfmt replace

// END OF DOCUMENT

```