

Missouri Growth Model Score Estimation Equations:

Output from First-Stage OLS Regressions

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Parameter Estimates from First-Stage OLS (2012 Models)

LEA Mathematics Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01362	0.00179	7.62	<.0001
Lagged Math Exam Score	0.62485	0.00088458	706.38	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.21999	0.00087356	251.83	<.0001
Indicator for Missing Lagged ELA score (Missing Indicator)*(Lagged Math Exam Score)	-0.07737	0.01435	-5.39	<.0001
Mobility Indicator (in building less than 1 year)	-0.11412	0.00296	-38.57	<.0001
LEA Average Lagged Math Score	0.22167	0.00651	34.05	<.0001
LEA Average Lagged ELA Score	-0.06764	0.0074	-9.13	<.0001
LEA Percent with Missing Lagged ELA Score	0.00391	0.00159	2.47	0.0137
Percent Mobile in LEA (building less than year)	-0.00248	0.00020859	-11.89	<.0001
Grade 4 Indicator	0.00262	0.00184	1.42	0.1558
Grade 5 Indicator	0.00158	0.00184	0.86	0.3917
Grade 6 Indicator	0.0012	0.00184	0.65	0.5156
Grade 7 Indicator	0.0001768	0.00184	0.1	0.9236
Indicator for 2010 Exam Record	-0.0002598	0.00143	-0.18	0.8555
Indicator for 2011 Exam Record	-0.00101	0.00143	-0.71	0.4777

n = 949224; *R-squared* = 0.6785

LEA English Language Arts Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01417	0.00182	7.81	<.0001
Lagged Year ELA Exam Score	0.60912	0.00088812	685.85	<.0001
Lagged Math Exam Score (missing set to 0)	0.23906	0.0008993	265.83	<.0001
Indicator for Missing Lagged Math score (Missing Indicator)*(Lagged ELA Exam Score)	-0.35683	0.01782	-20.02	<.0001
Mobility Indicator (in building less than 1 year)	-0.08461	0.00301	-28.12	<.0001
LEA Average Lagged ELA Score	0.27741	0.0075	37	<.0001
LEA Average Lagged Math Score	-0.14185	0.00665	-21.34	<.0001
LEA Percent with Missing Lagged Math Score	-0.0078	0.002	-3.9	<.0001
Percent Mobile in LEA (building less than year)	-0.00226	0.00021131	-10.67	<.0001
Grade 4 Indicator	0.00143	0.00187	0.76	0.4448
Grade 5 Indicator	0.00074137	0.00187	0.4	0.6921
Grade 6 Indicator	0.00020676	0.00187	0.11	0.912
Grade 7 Indicator	-0.00024624	0.00187	-0.13	0.8954
Indicator for 2010 Exam Record	0.00023253	0.00145	0.16	0.8727
Indicator for 2011 Exam Record	-0.00058995	0.00145	-0.41	0.6842

n = 948499; *R-squared* = 0.6677

School Mathematics Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01358	0.00167	8.15	<.0001
Lagged Math Exam Score	0.6225	0.000893	697.1	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.21849	0.000879	248.5	<.0001
Indicator for Missing Lagged ELA score (Missing Indicator)*(Lagged Math Exam Score)	-0.05585	0.01465	-3.81	0.0001
Mobility Indicator (in building less than 1 year)	0.03143	0.0096	3.28	0.0011
School Average Lagged Math Score	-0.10448	0.00299	-34.99	<.0001
School Average Lagged ELA Score	0.15424	0.0048	32.13	<.0001
School Percent with Missing Lagged ELA Score	-0.00898	0.00538	-1.67	0.0949
Percent Mobile in School (building less than year)	-0.00421	0.000557	-7.55	<.0001
Grade 4 Indicator	-0.00235	0.000157	-14.98	<.0001
Grade 5 Indicator	0.00354	0.00184	1.92	0.055
Grade 6 Indicator	0.00302	0.00184	1.64	0.1003
Grade 7 Indicator	0.00208	0.00184	1.13	0.2572
Indicator for 2010 Exam Record	0.0003843	0.00184	0.21	0.8347
Indicator for 2011 Exam Record	-7.165E-05	0.00143	-0.05	0.9599
	-0.0008295	0.00143	-0.58	0.5606

n = 949224; *R-squared* = 0.6787

School English Language Arts Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01633	0.00169	9.65	<.0001
Lagged Year ELA Exam Score	0.60659	0.000894	678.58	<.0001
Lagged Math Exam Score (missing set to 0)	0.23946	0.000908	263.76	<.0001
Indicator for Missing Lagged Math score (Missing Indicator)*(Lagged ELA Exam Score)	-0.3392	0.01823	-18.6	<.0001
Mobility Indicator (in building less than 1 year)	0.01396	0.01228	1.14	0.2557
School Average Lagged ELA Score	-0.07339	0.00304	-24.16	<.0001
School Average Lagged Math Score	0.22292	0.00548	40.71	<.0001
School Percent with Missing Lagged Math Score	-0.11017	0.00489	-22.55	<.0001
Percent Mobile in School (building less than year)	-0.00377	0.000748	-5.03	<.0001
Grade 4 Indicator	-0.00306	0.000157	-19.55	<.0001
Grade 5 Indicator	0.00223	0.00187	1.19	0.2346
Grade 6 Indicator	0.000924	0.00187	0.53	0.5959
Grade 7 Indicator	0.0003244	0.00187	0.17	0.8623
Indicator for 2010 Exam Record	-0.0005072	0.00187	-0.27	0.7866
Indicator for 2011 Exam Record	0.0001067	0.00145	0.07	0.9413
	-0.0007833	0.00145	-0.54	0.5889

n = 948498; *R-squared* = 0.6680

Parameter Estimates from First-Stage OLS (2013 Models)

LEA Mathematics Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.02367	0.00204	11.6	<.0001
Lagged Math Exam Score	0.60835	0.00088379	688.35	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.23613	0.00087654	269.39	<.0001
Indicator for Missing Lagged ELA score	-0.05052	0.01474	-3.43	0.0006
(Missing Indicator)*(Lagged Math Exam Score)	0.08	0.01031	7.76	<.0001
Mobility Indicator (in building less than 1 year)	-0.11567	0.003	-38.56	<.0001
LEA Average Lagged Math Score	0.24617	0.00665	37.04	<.0001
LEA Average Lagged ELA Score	-0.0979	0.00743	-13.18	<.0001
LEA Percent with Missing Lagged ELA Score	0.00347	0.00089972	3.85	0.0001
Percent Mobile in LEA (building less than year)	-0.00448	0.00029348	-15.27	<.0001
Grade 4 Indicator	0.00113	0.0019	0.59	0.5528
Grade 5 Indicator	-0.00008459	0.0019	-0.04	0.9645
Grade 6 Indicator	-0.00104	0.0019	-0.55	0.5822
Grade 7 Indicator	-0.00118	0.0019	-0.62	0.533
Indicator for 2011 Exam Record	-0.00149	0.00146	-1.02	0.3081
Indicator for 2012 Exam Record	0.00001374	0.00146	0.01	0.9925

n = 933562; *R-squared* = 0.6720

LEA English Language Arts Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01962	0.00202	9.69	<.0001
Lagged Year ELA Exam Score	0.61649	0.000879	701.63	<.0001
Lagged Math Exam Score (missing set to 0)	0.22975	0.000886	259.25	<.0001
Indicator for Missing Lagged Math score	-0.01591	0.01349	-1.18	0.2381
(Missing Indicator)*(Lagged ELA Exam Score)	0.13839	0.00858	16.13	<.0001
Mobility Indicator (in building less than 1 year)	-0.07904	0.00303	-26.05	<.0001
LEA Average Lagged ELA Score	0.30201	0.00746	40.48	<.0001
LEA Average Lagged Math Score	-0.1779	0.0067	-26.54	<.0001
LEA Percent with Missing Lagged Math Score	-0.0085	0.00143	-5.95	<.0001
Percent Mobile in LEA (building less than year)	-0.00364	0.000296	-12.29	<.0001
Grade 4 Indicator	0.00221	0.00189	1.17	0.2414
Grade 5 Indicator	0.00137	0.00189	0.72	0.4691
Grade 6 Indicator	0.000695	0.00189	0.37	0.7126
Grade 7 Indicator	0.000547	0.00188	0.29	0.7715
Indicator for 2011 Exam Record	-0.00141	0.00148	-0.96	0.3395
Indicator for 2012 Exam Record	-0.0005	0.00148	-0.34	0.7351

n = 948052; *R-squared* = 0.6628

School Mathematics Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01468	0.00181	8.12	<.0001
Lagged Math Exam Score	0.60554	0.000892	678.83	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.23426	0.000882	265.55	<.0001
Indicator for Missing Lagged ELA score (Missing Indicator)*(Lagged Math Exam Score)	-0.05903	0.01525	-3.87	0.0001
Mobility Indicator (in building less than 1 year)	0.06766	0.01035	6.54	<.0001
School Average Lagged Math Score	-0.10732	0.00303	-35.47	<.0001
School Average Lagged ELA Score	0.16383	0.00487	33.63	<.0001
School Percent with Missing Lagged ELA Score	-0.00768	0.00541	-1.42	0.1552
Percent Mobile in School (building less than year)	0.00113	0.000487	2.33	0.0201
Grade 4 Indicator	-0.00256	0.00019	-13.49	<.0001
Grade 5 Indicator	0.00282	0.0019	1.48	0.1386
Grade 6 Indicator	0.00208	0.0019	1.1	0.2733
Grade 7 Indicator	0.00113	0.0019	0.6	0.5509
Indicator for 2011 Exam Record	-0.00089	0.0019	-0.47	0.638
Indicator for 2012 Exam Record	-0.00137	0.00146	-0.94	0.3473
Indicator for 2012 Exam Record	-0.00038	0.00146	-0.26	0.7921

n = 933562; *R-squared* = 0.6723

School English Language Arts Parameter Estimates

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.01679	0.00175	9.57	<.0001
Lagged Year ELA Exam Score	0.61332	0.000884	693.62	<.0001
Lagged Math Exam Score (missing set to 0)	0.23055	0.000895	257.72	<.0001
Indicator for Missing Lagged Math score (Missing Indicator)*(Lagged ELA Exam Score)	0.00475	0.01371	0.35	0.7291
Mobility Indicator (in building less than 1 year)	0.13861	0.00857	16.17	<.0001
School Average Lagged ELA Score	-0.06947	0.00306	-22.69	<.0001
School Average Lagged Math Score	0.26321	0.00543	48.45	<.0001
School Percent with Missing Lagged Math Score	-0.15158	0.00489	-31	<.0001
Percent Mobile in School (building less than year)	-0.00604	0.00068	-8.87	<.0001
Grade 4 Indicator	-0.00315	0.000189	-16.68	<.0001
Grade 5 Indicator	0.00201	0.00189	1.06	0.2872
Grade 6 Indicator	0.00033	0.00189	0.17	0.8614
Grade 7 Indicator	0.000459	0.00189	0.24	0.8076
Indicator for 2011 Exam Record	-0.00025	0.00188	-0.13	0.8937
Indicator for 2011 Exam Record	-0.00089	0.00146	-0.61	0.5432
Indicator for 2012 Exam Record	-0.00013	0.00147	-0.09	0.932

n = 948051 *R-squared* = 0.6631

LEA Mathematics Parameter Estimates – 7th Grade Early Algebra 1 Examinees

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	-0.00598	0.10526	-0.06	0.9547
Lagged Math Exam Score	0.34502	0.03144	10.97	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.15375	0.03099	4.96	<.0001
Indicator for Missing Lagged ELA score	-0.59887	0.43159	-1.39	0.1657
(Missing Indicator)*(Lagged Math Exam Score)	-0.32755	0.16335	-2.01	0.0453
Mobility Indicator (in building less than 1 year)	0.49533	0.31923	1.55	0.1212
LEA Average Lagged Math Score	0.89837	0.4504	1.99	0.0464
LEA Average Lagged ELA Score	0.0948	0.52606	0.18	0.857
LEA Percent with Missing Lagged ELA Score	0.03186	0.02944	1.08	0.2794
Percent Mobile in LEA (building less than year)	-0.00963	0.02519	-0.38	0.7023

n = 776; R-squared = 0.4039

LEA Mathematics Parameter Estimates – 8th Grade Early Algebra 1 Examinees

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	-0.00891	0.01691	-0.53	0.5982
Lagged Math Exam Score	0.52559	0.00781	67.3	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.18317	0.00746	24.56	<.0001
Indicator for Missing Lagged ELA score	0.07922	0.16445	0.48	0.63
(Missing Indicator)*(Lagged Math Exam Score)	0.1375	0.10719	1.28	0.1996
Mobility Indicator (in building less than 1 year)	-0.23338	0.05509	-4.24	<.0001
LEA Average Lagged Math Score	0.15214	0.06949	2.19	0.0286
LEA Average Lagged ELA Score	0.21058	0.07634	2.76	0.0058
LEA Percent with Missing Lagged ELA Score	0.03914	0.00612	6.4	<.0001
Percent Mobile in LEA (building less than year)	-0.00279	0.00394	-0.71	0.4794

n = 13896; R-squared = 0.512

School Mathematics Parameter Estimates – 7th Grade Early Algebra 1 Examinees

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.0329	0.06509	0.51	0.6134
Lagged Math Exam Score	0.35825	0.03244	11.04	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.17234	0.03176	5.43	<.0001
Indicator for Missing Lagged ELA score (Missing Indicator)*(Lagged Math Exam Score)	-0.34389	0.44614	-0.77	0.4411
Mobility Indicator (in building less than 1 year)	-0.34078	0.16761	-2.03	0.0424
School Average Lagged Math Score	0.67179	0.32911	2.04	0.0416
School Average Lagged ELA Score	0.65844	0.37097	1.77	0.0763
School Percent with Missing Lagged ELA Score	0.01877	0.40603	0.05	0.9631
School Percent with Missing Lagged ELA Score	0.00467	0.0114	0.41	0.6824
Percent Mobile in School (building less than year)	-0.02283	0.01603	-1.42	0.1547

n = 776; R-squared = 0.3727

School Mathematics Parameter Estimates – 8th Grade Early Algebra 1 Examinees

	Parameter Estimate	Standard Error	t-value	P-value
Intercept	0.03899	0.0124	3.14	0.0017
Lagged Math Exam Score	0.50426	0.0079	63.84	<.0001
Lagged Year ELA Exam Score (missing set to 0)	0.17014	0.00747	22.78	<.0001
Indicator for Missing Lagged ELA score (Missing Indicator)*(Lagged Math Exam Score)	0.07414	0.16302	0.45	0.6492
Mobility Indicator (in building less than 1 year)	0.09366	0.10631	0.88	0.3783
School Average Lagged Math Score	-0.1681	0.05476	-3.07	0.0021
School Average Lagged ELA Score	0.16633	0.05434	3.06	0.0022
School Average Lagged ELA Score	0.14087	0.06244	2.26	0.0241
School Percent with Missing Lagged ELA Score	0.01617	0.00228	7.1	<.0001
Percent Mobile in School (building less than year)	-0.0136	0.00322	-4.23	<.0001

n = 13896; R-squared = 0.5204