



Appendix E

Summary Statistics and Standard
Errors for Proficiency in
Mathematics and Science Content
Areas in the Eighth and
Fourth Grades

Exhibit E.1 Summary Statistics and Standard Errors for Proficiency in Number in the Eighth Grade

Country	Sample Size	Number		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5726	473.267	79.505	3.109	3.126
Australia	4791	498.444	85.356	4.543	4.591
Bahrain	4199	380.319	80.907	1.628	1.887
Belgium (Flemish)	4970	539.216	68.211	2.462	2.666
Botswana	5150	382.318	68.160	1.939	2.183
Bulgaria	4117	476.678	83.568	3.979	4.108
Chile	6377	389.569	83.970	2.922	3.101
Chinese Taipei	5379	585.280	101.405	4.491	4.561
Cyprus	4002	463.727	83.227	1.330	1.492
Egypt	7095	420.540	85.114	2.986	3.011
England	2830	484.823	79.581	4.794	5.017
Estonia	4040	522.729	71.906	3.035	3.120
Ghana	5100	289.258	100.874	4.675	5.065
Hong Kong, SAR	4972	585.716	71.429	3.209	3.233
Hungary	3302	528.668	83.381	3.517	3.617
Indonesia	5762	421.155	85.931	4.498	4.581
Iran, Islamic Rep. of	4942	416.253	76.089	2.146	2.348
Israel	4318	503.578	84.842	3.239	3.317
Italy	4278	479.593	76.516	3.042	3.221
Japan	4856	556.710	89.474	2.180	2.343
Jordan	4489	413.374	94.335	4.276	4.409
Korea, Rep. of	5309	585.844	86.000	1.916	2.117
Latvia	3630	506.774	74.256	3.050	3.210
Lebanon	3814	429.979	68.779	3.112	3.260
Lithuania	4964	499.762	80.485	2.512	2.676
Macedonia, Rep. of	3893	437.596	80.003	3.408	3.485
Malaysia	5314	524.137	72.511	3.937	4.019
Moldova, Rep. of	4033	462.580	76.786	3.706	3.844
Morocco	2943	384.420	67.522	2.249	2.668
Netherlands	3065	538.549	68.309	3.519	3.562
New Zealand	3801	481.346	83.145	5.864	5.999
Norway	4133	455.986	73.523	2.038	2.266
Palestinian Nat'l Auth.	5357	385.293	95.520	3.336	3.597
Philippines	6917	393.469	87.108	5.048	5.101
Romania	4104	474.491	88.736	4.724	4.915
Russian Federation	4667	505.121	81.205	3.864	3.989
Saudi Arabia	4295	307.052	87.039	4.867	5.331
Scotland	3516	483.860	78.723	3.871	4.164
Serbia	4296	477.223	84.391	2.487	2.827
Singapore	6018	617.541	77.753	3.440	3.462
Slovak Republic	4215	514.232	82.868	3.266	3.338
Slovenia	3578	498.419	70.933	1.968	2.011
South Africa	8952	273.938	106.715	5.209	5.433
Sweden	4256	495.812	71.351	2.498	2.605
Tunisia	4931	419.390	61.945	2.044	2.272
United States	8912	507.636	80.968	3.258	3.352

Exhibit E.2 Summary Statistics and Standard Errors for Proficiency in Number in the Fourth Grade

Country	Sample Size	Number		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5674	473.328	84.044	2.779	2.958
Australia	4321	478.579	89.937	4.174	4.333
Belgium (Flemish)	4712	548.604	65.837	1.853	1.912
Chinese Taipei	4661	567.638	70.116	1.696	1.821
Cyprus	4328	513.697	90.674	2.391	2.652
England	3585	519.046	96.405	3.928	4.064
Hong Kong, SAR	4608	573.781	69.400	3.212	3.320
Hungary	3319	523.559	75.099	2.726	2.909
Iran, Islamic Rep. of	4352	410.107	78.901	3.682	3.742
Italy	4282	502.491	85.291	3.567	3.590
Japan	4535	555.833	83.143	1.711	2.024
Latvia	3687	530.908	76.392	2.527	2.630
Lithuania	4422	535.081	76.314	2.644	2.901
Moldova, Rep. of	3981	506.567	86.178	4.536	4.654
Morocco	4264	359.182	92.172	4.640	4.651
Netherlands	2937	536.190	63.546	2.113	2.246
New Zealand	4308	474.811	94.099	2.257	2.330
Norway	4342	440.423	86.541	1.996	2.203
Philippines	4572	380.199	102.046	7.360	7.413
Russian Federation	3963	531.660	79.149	4.512	4.589
Scotland	3936	475.008	86.036	3.122	3.303
Singapore	6668	612.257	95.779	5.951	6.002
Slovenia	3126	461.128	84.004	2.593	2.682
Tunisia	4334	360.350	98.732	4.084	4.133
United States	9829	516.383	84.557	2.511	2.639

Exhibit E.3 Summary Statistics and Standard Errors for Proficiency in Algebra in the Eighth Grade

Country	Algebra				Overall Standard Error
	Sample Size	Mean Proficiency	Standard Deviation	Jackknife Sampling Error	
Armenia	5726	489.164	90.308	2.562	2.626
Australia	4791	498.656	83.238	4.239	4.375
Bahrain	4199	410.653	84.809	1.492	2.523
Belgium (Flemish)	4970	523.137	75.603	2.699	2.757
Botswana	5150	376.764	78.683	2.102	2.730
Bulgaria	4117	480.740	84.273	3.932	3.952
Chile	6377	384.442	85.956	2.678	3.090
Chinese Taipei	5379	585.377	108.125	4.883	4.905
Cyprus	4002	455.256	85.869	1.488	1.663
Egypt	7095	407.710	102.031	3.768	3.904
England	2830	491.928	79.014	4.365	4.532
Estonia	4040	528.407	65.280	2.490	2.610
Ghana	5100	287.733	104.397	4.095	4.820
Hong Kong, SAR	4972	579.891	72.063	3.102	3.167
Hungary	3302	533.892	76.312	2.956	3.107
Indonesia	5762	418.125	87.359	4.139	4.481
Iran, Islamic Rep. of	4942	411.505	77.259	2.642	3.149
Israel	4318	497.562	86.094	3.140	3.170
Italy	4278	476.644	78.305	3.329	3.429
Japan	4856	567.844	80.205	1.925	2.015
Jordan	4489	434.032	92.925	4.133	4.442
Korea, Rep. of	5309	596.957	92.569	2.067	2.153
Latvia	3630	508.076	73.597	2.957	3.160
Lebanon	3814	447.559	66.871	2.991	3.113
Lithuania	4964	501.454	74.163	2.333	2.357
Macedonia, Rep. of	3893	441.903	96.056	3.631	3.649
Malaysia	5314	494.560	75.253	3.780	3.855
Moldova, Rep. of	4033	464.133	88.002	4.049	4.187
Morocco	2943	400.393	75.569	2.320	2.753
Netherlands	3065	513.750	75.453	3.914	3.993
New Zealand	3801	489.955	76.780	5.109	5.217
Norway	4133	428.212	80.696	2.477	2.713
Palestinian Nat'l Auth.	5357	392.103	99.279	3.418	3.508
Philippines	6917	400.315	94.143	5.093	5.237
Romania	4104	480.319	94.920	4.596	4.665
Russian Federation	4667	516.000	72.413	3.013	3.194
Saudi Arabia	4295	330.644	89.845	3.851	4.679
Scotland	3516	488.061	79.774	3.777	3.936
Serbia	4296	487.769	87.120	2.222	2.549
Singapore	6018	589.546	85.023	3.395	3.515
Slovak Republic	4215	504.689	79.361	3.174	3.273
Slovenia	3578	486.549	70.845	2.198	2.284
South Africa	8952	274.571	113.462	4.968	5.055
Sweden	4256	480.280	75.548	2.558	2.975
Tunisia	4931	404.628	66.670	2.057	2.446
United States	8912	509.947	77.481	3.067	3.107

Exhibit E.4 **Summary Statistics and Standard Errors for Proficiency in Patterns and Relationships in the Fourth Grade**

Country	Patterns and Relationships				Overall Standard Error
	Sample Size	Mean Proficiency	Standard Deviation	Jackknife Sampling Error	
Armenia	5674	460.537	106.827	3.912	4.095
Australia	4321	495.442	77.372	3.508	3.715
Belgium (Flemish)	4712	542.229	58.887	1.647	1.894
Chinese Taipei	4661	554.689	67.869	1.822	2.413
Cyprus	4328	518.944	82.079	2.301	2.420
England	3585	523.413	90.395	3.382	3.891
Hong Kong, SAR	4608	568.013	67.647	3.164	3.463
Hungary	3319	544.519	85.845	3.247	3.658
Iran, Islamic Rep. of	4352	394.170	90.984	3.801	3.912
Italy	4282	496.055	87.927	4.113	4.274
Japan	4535	553.964	68.983	1.299	1.448
Latvia	3687	531.718	78.409	2.583	3.359
Lithuania	4422	531.105	77.017	2.754	2.951
Moldova, Rep. of	3981	520.961	95.179	5.024	5.107
Morocco	4264	360.317	96.697	4.385	4.694
Netherlands	2937	527.422	53.077	2.000	2.399
New Zealand	4308	494.507	83.412	2.065	2.879
Norway	4342	438.981	86.763	2.207	2.671
Philippines	4572	382.114	109.018	6.917	7.031
Russian Federation	3963	530.806	77.418	4.458	4.962
Scotland	3936	494.813	71.953	2.715	2.892
Singapore	6668	578.702	85.143	5.295	5.414
Slovenia	3126	489.697	75.300	2.170	2.706
Tunisia	4334	330.042	117.258	4.551	4.745
United States	9829	523.722	73.942	2.290	2.658

Exhibit E.5 Summary Statistics and Standard Errors for Proficiency in Measurement in the Eighth Grade

Country	Sample Size	Measurement			Overall Standard Error
		Mean Proficiency	Standard Deviation	Jackknife Sampling Error	
Armenia	5726	488.173	94.024	2.988	3.277
Australia	4791	510.720	79.063	4.275	4.313
Bahrain	4199	388.454	88.081	1.579	2.109
Belgium (Flemish)	4970	534.762	68.471	2.454	2.525
Botswana	5150	377.298	70.558	1.932	2.029
Bulgaria	4117	472.564	87.808	4.494	4.623
Chile	6377	403.690	74.536	2.687	2.893
Chinese Taipei	5379	574.173	94.175	4.041	4.354
Cyprus	4002	459.015	86.395	1.496	2.204
Egypt	7095	400.810	91.796	3.075	3.335
England	2830	505.279	72.035	4.237	4.261
Estonia	4040	528.055	73.989	2.904	2.961
Ghana	5100	261.840	98.886	3.468	3.669
Hong Kong, SAR	4972	584.053	68.238	2.883	3.337
Hungary	3302	524.564	80.169	2.936	3.079
Indonesia	5762	394.008	98.268	4.759	4.940
Iran, Islamic Rep. of	4942	398.594	78.978	2.275	2.636
Israel	4318	480.449	82.980	3.222	3.440
Italy	4278	499.855	79.525	3.070	3.210
Japan	4856	559.021	73.550	1.900	1.989
Jordan	4489	417.787	88.606	3.733	4.371
Korea, Rep. of	5309	577.293	82.804	1.855	2.044
Latvia	3630	500.480	70.496	2.960	2.987
Lebanon	3814	429.708	72.622	2.783	3.674
Lithuania	4964	492.150	85.546	2.842	3.042
Macedonia, Rep. of	3893	434.070	89.149	3.523	3.637
Malaysia	5314	504.245	82.996	4.429	4.487
Moldova, Rep. of	4033	467.999	81.228	3.774	3.953
Morocco	2943	376.151	71.757	2.001	3.401
Netherlands	3065	548.558	69.632	3.569	3.719
New Zealand	3801	500.086	77.058	4.732	4.847
Norway	4133	480.990	68.057	2.228	2.882
Palestinian Nat'l Auth.	5357	385.511	91.722	2.721	2.762
Philippines	6917	371.507	83.053	4.702	4.811
Romania	4104	485.319	86.982	4.656	4.720
Russian Federation	4667	507.275	77.883	3.733	3.908
Saudi Arabia	4295	337.991	79.357	2.891	3.400
Scotland	3516	507.722	69.697	3.423	3.646
Serbia	4296	475.120	94.688	2.480	2.525
Singapore	6018	610.527	79.744	3.403	3.581
Slovak Republic	4215	507.633	86.279	3.607	3.737
Slovenia	3578	495.902	75.423	2.121	2.299
South Africa	8952	298.433	92.146	4.210	4.679
Sweden	4256	512.055	69.888	2.554	2.584
Tunisia	4931	406.762	72.902	2.080	2.234
United States	8912	495.230	78.655	3.099	3.175

Exhibit E.6 Summary Statistics and Standard Errors for Proficiency in Measurement in the Fourth Grade

Country	Sample Size	Measurement		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5674	465.283	78.798	3.093	3.138
Australia	4321	513.701	74.151	3.543	3.677
Belgium (Flemish)	4712	549.773	50.562	1.391	1.419
Chinese Taipei	4661	556.920	55.440	1.493	1.644
Cyprus	4328	505.571	79.548	2.218	2.343
England	3585	534.851	77.764	3.134	3.302
Hong Kong, SAR	4608	562.531	56.375	2.593	2.665
Hungary	3319	532.438	69.004	2.600	2.717
Iran, Islamic Rep. of	4352	398.380	84.321	3.053	3.181
Italy	4282	504.135	77.090	3.240	3.382
Japan	4535	567.905	62.440	1.223	1.576
Latvia	3687	544.758	65.287	2.337	2.628
Lithuania	4422	539.999	68.405	2.382	2.700
Moldova, Rep. of	3981	504.922	76.133	3.912	4.010
Morocco	4264	344.551	102.512	5.398	5.470
Netherlands	2937	544.562	53.222	1.701	2.181
New Zealand	4308	502.977	75.207	1.865	2.037
Norway	4342	474.896	75.000	1.827	2.166
Philippines	4572	330.135	119.368	7.672	7.778
Russian Federation	3963	538.153	71.515	3.762	3.844
Scotland	3936	499.440	70.080	2.769	3.083
Singapore	6668	566.461	73.011	4.575	4.639
Slovenia	3126	496.828	77.133	2.294	2.818
Tunisia	4334	308.145	128.241	5.282	5.479
United States	9829	499.696	69.350	2.104	2.133

Exhibit E.7 Summary Statistics and Standard Errors for Proficiency in Geometry in the Eighth Grade

Country	Sample Size	Geometry		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5726	480.773	72.312	2.890	3.100
Australia	4791	491.313	80.929	4.450	4.771
Bahrain	4199	437.985	72.013	1.356	2.085
Belgium (Flemish)	4970	527.484	79.194	2.770	3.067
Botswana	5150	334.878	88.400	2.800	3.864
Bulgaria	4117	484.279	84.512	4.219	4.513
Chile	6377	377.911	87.684	3.226	3.334
Chinese Taipei	5379	587.647	110.178	4.839	5.121
Cyprus	4002	457.068	76.195	1.393	2.418
Egypt	7095	407.955	103.483	3.581	3.616
England	2830	491.588	82.289	4.166	4.519
Estonia	4040	539.538	65.627	2.383	2.648
Ghana	5100	277.838	104.213	3.963	4.303
Hong Kong, SAR	4972	588.178	79.767	3.470	3.625
Hungary	3302	515.251	80.854	3.115	3.131
Indonesia	5762	413.173	88.823	4.183	4.606
Iran, Islamic Rep. of	4942	437.415	75.313	2.426	3.092
Israel	4318	487.692	85.826	3.247	3.651
Italy	4278	468.911	80.825	3.308	3.470
Japan	4856	586.640	80.239	1.940	2.112
Jordan	4489	446.245	80.542	3.649	3.955
Korea, Rep. of	5309	597.568	86.864	1.818	2.574
Latvia	3630	514.815	74.044	2.889	3.274
Lebanon	3814	459.003	66.327	2.563	3.016
Lithuania	4964	506.352	77.593	2.264	2.472
Macedonia, Rep. of	3893	441.632	87.512	3.113	3.731
Malaysia	5314	494.773	82.008	4.639	4.776
Moldova, Rep. of	4033	462.709	93.192	4.605	4.744
Morocco	2943	414.860	65.980	1.958	2.271
Netherlands	3065	512.837	74.252	3.868	4.129
New Zealand	3801	488.184	76.044	4.576	4.626
Norway	4133	460.915	69.545	2.138	2.757
Palestinian Nat'l Auth.	5357	422.976	88.744	2.838	3.104
Philippines	6917	344.473	87.804	4.844	5.326
Romania	4104	476.338	87.583	4.662	4.899
Russian Federation	4667	514.765	81.219	3.982	4.213
Saudi Arabia	4295	381.626	79.169	3.614	4.272
Scotland	3516	490.587	70.267	3.290	3.314
Serbia	4296	471.105	87.159	2.555	2.989
Singapore	6018	579.530	80.657	3.512	3.714
Slovak Republic	4215	501.210	85.464	3.522	3.626
Slovenia	3578	482.974	73.153	2.149	2.530
South Africa	8952	246.743	117.960	5.237	5.398
Sweden	4256	467.001	77.223	2.725	3.421
Tunisia	4931	427.475	61.331	1.915	2.044
United States	8912	471.992	74.399	2.749	3.120

Exhibit E.8 Summary Statistics and Standard Errors for Proficiency in Geometry in the Fourth Grade

Country	Sample Size	Geometry		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5674	430.756	100.807	3.495	3.791
Australia	4321	523.976	76.348	3.076	3.718
Belgium (Flemish)	4712	532.615	60.052	1.299	1.799
Chinese Taipei	4661	553.044	69.193	1.720	2.459
Cyprus	4328	504.950	73.497	2.053	2.298
England	3585	541.547	89.162	3.487	3.659
Hong Kong, SAR	4608	556.585	64.033	2.684	2.913
Hungary	3319	514.014	73.733	2.642	3.266
Iran, Islamic Rep. of	4352	415.769	85.733	3.745	3.884
Italy	4282	522.118	80.075	3.313	3.494
Japan	4535	559.078	76.230	1.478	1.882
Latvia	3687	522.819	51.885	1.806	2.193
Lithuania	4422	524.239	66.586	1.941	2.164
Moldova, Rep. of	3981	500.576	93.567	4.606	4.887
Morocco	4264	362.169	107.953	4.650	4.901
Netherlands	2937	520.631	63.614	2.430	3.154
New Zealand	4308	517.422	72.375	1.606	1.841
Norway	4342	477.819	77.603	1.711	2.164
Philippines	4572	335.112	142.055	8.551	8.816
Russian Federation	3963	528.268	82.528	4.626	4.791
Scotland	3936	511.091	68.371	2.291	2.464
Singapore	6668	569.790	103.649	5.419	5.454
Slovenia	3126	498.405	70.334	1.814	2.159
Tunisia	4334	346.363	121.433	4.394	5.109
United States	9829	517.962	73.306	1.902	2.157

Exhibit E.9 Summary Statistics and Standard Errors for Proficiency in Data in the Eighth Grade

Country	Sample Size	Data		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5726	418.771	92.733	2.568	2.704
Australia	4791	531.324	77.134	3.681	3.784
Bahrain	4199	413.913	72.553	1.140	2.132
Belgium (Flemish)	4970	545.879	74.497	2.537	2.889
Botswana	5150	374.820	77.507	2.392	2.728
Bulgaria	4117	458.419	89.768	3.708	3.936
98145.451	6377	412.213	90.325	2.847	3.371
Chinese Taipei	5379	567.786	83.146	3.292	3.352
Cyprus	4002	458.009	73.606	1.465	1.713
Egypt	7095	393.420	82.696	2.887	3.170
England	2830	534.888	77.203	3.930	4.067
Estonia	4040	535.207	73.957	2.785	2.839
Ghana	5100	292.952	99.584	4.028	4.061
Hong Kong, SAR	4972	566.137	72.044	2.925	2.963
Hungary	3302	525.808	79.419	2.731	2.932
Indonesia	5762	418.498	84.763	3.682	4.045
Iran, Islamic Rep. of	4942	404.296	80.772	2.480	2.590
Israel	4318	491.537	93.043	3.194	3.320
Italy	4278	490.058	77.600	2.647	2.974
Japan	4856	572.656	71.782	1.757	1.877
Jordan	4489	430.241	81.647	3.020	3.459
Korea, Rep. of	5309	568.995	72.148	1.437	1.975
Latvia	3630	506.401	80.263	3.258	3.827
Lebanon	3814	393.836	82.505	3.408	4.004
Lithuania	4964	501.897	81.108	2.179	2.512
Macedonia, Rep. of	3893	418.819	98.175	3.542	3.588
Malaysia	5314	505.007	64.203	3.118	3.235
Moldova, Rep. of	4033	428.005	78.777	3.123	3.433
Morocco	2943	373.654	79.352	2.142	2.457
Netherlands	3065	560.019	69.502	3.097	3.119
New Zealand	3801	525.944	79.020	5.019	5.143
Norway	4133	498.263	80.811	2.378	2.471
Palestinian Nat'l Auth.	5357	390.369	83.415	2.484	2.834
Philippines	6917	390.435	78.848	4.113	4.453
Romania	4104	445.307	92.067	4.289	4.551
Russian Federation	4667	484.062	76.984	3.086	3.207
Saudi Arabia	4295	338.687	84.091	3.544	3.809
Scotland	3516	531.169	77.077	3.334	3.665
Serbia	4296	456.210	91.982	2.388	2.576
Singapore	6018	579.491	78.307	3.152	3.198
Slovak Republic	4215	495.278	85.922	2.782	2.899
Slovenia	3578	493.812	76.455	2.212	2.301
South Africa	8952	296.246	110.593	4.944	5.319
Sweden	4256	539.423	79.890	2.866	2.950
Tunisia	4931	386.850	71.829	1.713	2.172
United States	8912	526.691	79.301	3.012	3.164

Exhibit E.10 Summary Statistics and Standard Errors for Proficiency in Data in the Fourth Grade

Country	Sample Size	Data		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5674	416.987	81.117	3.161	3.609
Australia	4321	524.754	71.216	3.418	3.614
Belgium (Flemish)	4712	548.013	59.057	1.599	2.167
Chinese Taipei	4661	563.826	61.406	1.558	2.309
Cyprus	4328	509.193	74.667	2.097	2.295
England	3585	551.513	77.268	2.943	3.413
Hong Kong, SAR	4608	561.875	46.191	1.977	2.253
Hungary	3319	513.197	71.992	3.003	3.160
Iran, Islamic Rep. of	4352	356.402	105.500	4.311	4.371
Italy	4282	496.763	68.422	2.753	2.991
Japan	4535	592.823	81.730	1.578	1.637
Latvia	3687	525.532	71.531	2.483	2.701
Lithuania	4422	517.399	69.538	2.485	2.545
Moldova, Rep. of	3981	476.500	76.839	4.088	4.262
Morocco	4264	355.276	89.038	4.614	5.012
Netherlands	2937	552.893	52.956	1.812	2.434
New Zealand	4308	521.631	82.056	1.851	1.972
Norway	4342	479.085	86.295	2.123	2.279
Philippines	4572	383.997	110.383	7.330	7.463
Russian Federation	3963	505.067	64.951	3.892	4.050
Scotland	3936	515.899	68.288	2.375	2.702
Singapore	6668	575.070	60.984	3.652	3.889
Slovenia	3126	486.244	65.844	2.372	2.739
Tunisia	4334	308.240	107.923	4.514	4.650
United States	9829	548.671	68.144	1.885	2.039

Exhibit E.11 Summary Statistics and Standard Errors for Proficiency in Life Science in the Eighth Grade

Country	Sample Size	Life Science		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5726	452.987	84.319	3.179	3.303
Australia	4791	532.408	75.249	3.614	3.768
Bahrain	4199	444.590	74.040	1.523	1.865
Belgium (Flemish)	4970	525.827	69.487	2.242	2.369
Botswana	5150	369.942	91.757	2.635	2.731
Bulgaria	4117	474.154	95.259	5.045	5.160
Chile	6377	426.770	84.360	2.646	2.729
Chinese Taipei	5379	562.553	73.036	3.044	3.120
Cyprus	4002	436.785	85.134	1.812	2.221
Egypt	7095	425.244	99.625	3.615	3.739
England	2830	543.037	74.459	3.752	3.902
Estonia	4040	546.508	63.890	2.269	2.427
Ghana	5100	256.392	124.017	5.382	5.604
Hong Kong, SAR	4972	551.244	62.267	2.805	2.940
Hungary	3302	536.455	70.137	2.633	2.695
Indonesia	5762	423.610	74.770	3.593	3.883
Iran, Islamic Rep. of	4942	446.729	68.980	2.213	2.599
Israel	4318	490.941	86.316	3.017	3.042
Italy	4278	497.596	80.728	2.916	3.247
Japan	4856	549.342	70.356	1.663	2.017
Jordan	4489	474.942	86.706	3.629	3.991
Korea, Rep. of	5309	558.424	66.645	1.440	1.560
Latvia	3630	511.283	65.869	2.394	2.534
Lebanon	3814	359.968	107.157	4.784	4.972
Lithuania	4964	516.944	71.688	2.321	2.396
Macedonia, Rep. of	3893	448.126	94.952	3.737	3.832
Malaysia	5314	504.265	66.440	3.638	3.693
Moldova, Rep. of	4033	465.955	72.721	3.229	3.679
Morocco	2943	389.621	80.109	2.446	2.650
Netherlands	3065	536.420	61.812	3.075	3.290
New Zealand	3801	523.192	77.440	5.059	5.146
Norway	4133	495.516	75.616	2.200	2.460
Palestinian Nat'l Auth.	5357	434.984	84.075	3.092	3.606
Philippines	6917	386.977	108.993	5.753	5.819
Romania	4104	471.215	90.979	4.751	4.791
Russian Federation	4667	514.092	76.750	3.255	3.284
Saudi Arabia	4295	411.604	69.577	3.413	3.915
Scotland	3516	512.326	76.714	3.185	3.312
Serbia	4296	468.196	83.442	2.472	2.580
Singapore	6018	568.671	87.670	3.946	4.020
Slovak Republic	4215	513.592	72.358	2.758	2.946
Slovenia	3578	520.802	69.395	1.981	2.223
South Africa	8952	250.120	130.677	5.871	5.958
Sweden	4256	527.809	77.000	2.655	2.709
Tunisia	4931	417.391	60.779	1.873	1.969
United States	8912	536.992	82.372	2.952	3.007

Exhibit E.12 Summary Statistics and Standard Errors for Proficiency in Life Science in the Fourth Grade

Country	Life Science				Overall Standard Error
	Sample Size	Mean Proficiency	Standard Deviation	Jackknife Sampling Error	
Armenia	5674	435.430	103.424	4.299	4.365
Australia	4321	523.337	75.827	3.834	3.845
Belgium (Flemish)	4712	523.708	55.555	1.567	1.733
Chinese Taipei	4661	540.346	59.459	1.355	1.560
Cyprus	4328	482.330	70.652	2.039	2.104
England	3585	531.827	76.461	2.983	3.106
Hong Kong, SAR	4608	534.657	58.283	2.532	2.557
Hungary	3319	536.362	74.227	2.440	2.521
Iran, Islamic Rep. of	4352	423.809	90.406	4.213	4.560
Italy	4282	521.048	79.174	3.485	3.494
Japan	4535	529.763	65.393	1.076	1.306
Latvia	3687	530.716	62.182	2.198	2.276
Lithuania	4422	516.335	58.103	1.893	1.951
Moldova, Rep. of	3981	503.702	81.576	3.854	3.925
Morocco	4264	299.842	132.612	5.753	6.122
Netherlands	2937	547.105	54.141	1.717	1.819
New Zealand	4308	520.033	81.206	2.193	2.272
Norway	4342	479.867	77.406	2.183	2.234
Philippines	4572	330.343	138.693	8.802	8.983
Russian Federation	3963	526.146	72.622	4.666	4.726
Scotland	3936	505.629	73.858	2.783	3.131
Singapore	6668	557.581	79.970	5.002	5.045
Slovenia	3126	488.638	75.461	2.525	2.904
Tunisia	4334	289.669	141.489	5.891	5.941
United States	9829	536.996	76.386	2.161	2.171

Exhibit E.13 Summary Statistics and Standard Errors for Proficiency in Chemistry in the Eighth Grade

Country	Sample Size	Chemistry		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5726	465.612	102.835	4.070	4.201
Australia	4791	506.347	71.621	3.779	3.806
Bahrain	4199	441.296	77.552	1.548	2.649
Belgium (Flemish)	4970	502.576	56.551	1.940	2.014
Botswana	5150	348.198	100.597	2.908	3.126
Bulgaria	4117	482.440	96.228	5.334	5.709
Chile	6377	404.909	91.194	2.919	3.267
Chinese Taipei	5379	583.713	92.897	3.896	3.994
Cyprus	4002	442.726	79.782	1.616	2.647
Egypt	7095	441.566	106.786	3.644	3.814
England	2830	527.158	81.031	4.156	4.198
Estonia	4040	551.590	59.554	2.014	2.127
Ghana	5100	275.668	134.164	5.578	6.552
Hong Kong, SAR	4972	541.873	53.921	2.444	2.555
Hungary	3302	559.987	77.925	2.796	3.072
Indonesia	5762	391.239	80.490	3.508	3.848
Iran, Islamic Rep. of	4942	445.277	83.331	2.470	2.715
Israel	4318	499.488	82.575	2.731	3.407
Italy	4278	486.928	75.820	2.943	3.303
Japan	4856	552.241	63.019	1.574	2.107
Jordan	4489	477.592	96.889	3.643	4.392
Korea, Rep. of	5309	528.840	67.060	1.542	2.506
Latvia	3630	513.700	72.904	3.078	3.204
Lebanon	3814	433.490	91.751	4.012	4.877
Lithuania	4964	533.996	71.536	2.144	2.335
Macedonia, Rep. of	3893	466.684	100.045	3.664	3.861
Malaysia	5314	513.611	63.774	3.390	3.764
Moldova, Rep. of	4033	478.615	83.602	3.511	3.943
Morocco	2943	401.934	72.549	2.328	2.748
Netherlands	3065	514.421	49.978	2.361	2.623
New Zealand	3801	500.668	75.073	5.015	5.605
Norway	4133	484.554	59.164	1.834	3.008
Palestinian Nat'l Auth.	5357	444.464	101.417	3.402	3.924
Philippines	6917	342.004	113.497	5.877	6.073
Romania	4104	474.135	97.035	4.852	4.926
Russian Federation	4667	527.165	80.476	3.846	3.987
Saudi Arabia	4295	381.756	83.625	4.243	4.774
Scotland	3516	498.871	73.060	3.128	3.214
Serbia	4296	473.951	90.876	2.582	3.193
Singapore	6018	582.455	93.609	4.147	4.198
Slovak Republic	4215	519.321	76.986	3.147	3.645
Slovenia	3578	531.858	70.713	1.916	2.570
South Africa	8952	285.156	115.565	5.190	5.944
Sweden	4256	526.082	62.466	2.347	2.556
Tunisia	4931	413.383	63.943	1.698	2.526
United States	8912	512.699	78.001	2.955	3.183

Exhibit E.14 Summary Statistics and Standard Errors for Proficiency in Physics in the Eighth Grade

Country	Sample Size	Physics		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5726	479.279	73.659	3.141	3.230
Australia	4791	521.169	72.150	3.594	3.746
Bahrain	4199	443.265	82.295	1.737	1.968
Belgium (Flemish)	4970	513.506	62.509	2.162	2.504
Botswana	5150	371.459	89.168	2.631	3.196
Bulgaria	4117	485.110	88.538	4.757	4.951
Chile	6377	400.703	81.344	2.727	3.076
Chinese Taipei	5379	569.215	73.925	3.092	3.284
Cyprus	4002	449.522	76.224	1.545	1.743
Egypt	7095	413.711	108.129	3.926	4.127
England	2830	544.673	69.098	3.424	3.484
Estonia	4040	544.496	62.543	2.080	2.353
Ghana	5100	239.154	125.028	5.287	5.371
Hong Kong, SAR	4972	554.974	65.468	2.687	2.779
Hungary	3302	536.145	75.387	2.588	2.671
Indonesia	5762	430.013	83.677	3.873	4.039
Iran, Islamic Rep. of	4942	445.161	82.336	2.437	2.990
Israel	4318	483.882	83.372	2.842	2.927
Italy	4278	470.370	81.045	3.051	3.163
Japan	4856	563.776	70.331	1.637	1.875
Jordan	4489	465.099	93.001	3.586	3.847
Korea, Rep. of	5309	578.661	67.520	1.407	1.563
Latvia	3630	511.950	64.046	2.133	2.377
Lebanon	3814	418.801	81.557	3.260	3.972
Lithuania	4964	519.343	61.788	2.042	2.662
Macedonia, Rep. of	3893	457.850	82.112	2.833	3.057
Malaysia	5314	519.323	65.686	3.429	3.637
Moldova, Rep. of	4033	478.759	75.438	3.330	3.743
Morocco	2943	409.840	73.189	2.410	2.655
Netherlands	3065	538.346	61.140	2.998	3.406
New Zealand	3801	515.377	65.431	4.509	4.706
Norway	4133	487.740	68.022	2.115	2.563
Palestinian Nat'l Auth.	5357	432.184	100.381	3.359	3.579
Philippines	6917	380.461	92.748	4.629	4.728
Romania	4104	472.830	83.044	3.983	4.052
Russian Federation	4667	511.444	73.356	3.395	3.450
Saudi Arabia	4295	394.032	80.422	3.730	3.871
Scotland	3516	515.026	67.740	2.915	3.029
Serbia	4296	470.908	86.545	2.284	2.630
Singapore	6018	578.558	77.566	3.339	3.403
Slovak Republic	4215	519.022	72.230	2.570	2.930
Slovenia	3578	508.840	58.455	1.596	1.802
South Africa	8952	244.189	135.112	6.103	6.207
Sweden	4256	524.573	74.067	2.667	2.869
Tunisia	4931	385.681	76.073	2.193	2.526
United States	8912	515.324	74.698	2.800	2.930

Exhibit E.15 Summary Statistics and Standard Errors for Proficiency in Physical Science in the Fourth Grade

Country	Sample Size	Physical Science		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5674	429.183	100.500	4.181	4.274
Australia	4321	517.951	80.712	3.854	3.885
Belgium (Flemish)	4712	507.102	56.861	1.641	2.273
Chinese Taipei	4661	553.988	78.602	1.954	2.034
Cyprus	4328	479.128	80.981	2.225	2.287
England	3585	546.379	80.070	3.204	3.248
Hong Kong, SAR	4608	547.513	60.248	2.664	2.711
Hungary	3319	526.355	75.392	2.519	2.678
Iran, Islamic Rep. of	4352	418.515	101.626	4.321	4.468
Italy	4282	511.860	83.371	3.442	3.543
Japan	4535	557.287	78.186	1.543	1.721
Latvia	3687	531.607	69.904	2.519	2.611
Lithuania	4422	512.251	67.170	2.120	2.475
Moldova, Rep. of	3981	488.758	82.616	3.879	3.925
Morocco	4264	307.951	127.849	6.819	7.001
Netherlands	2937	505.069	52.522	1.829	1.879
New Zealand	4308	516.083	84.557	2.185	2.337
Norway	4342	455.895	77.696	1.919	2.295
Philippines	4572	343.008	144.669	9.156	9.588
Russian Federation	3963	526.551	82.559	5.053	5.151
Scotland	3936	502.507	74.195	2.543	2.647
Singapore	6668	577.257	94.871	5.881	5.891
Slovenia	3126	496.784	71.577	2.285	2.345
Tunisia	4334	324.191	130.841	5.207	5.255
United States	9829	531.091	77.369	2.227	2.267

Exhibit E.16 Summary Statistics and Standard Errors for Proficiency in Earth Science in the Eighth Grade

Country	Earth Science				Overall Standard Error
	Sample Size	Mean Proficiency	Standard Deviation	Jackknife Sampling Error	
Armenia	5726	459.668	90.703	3.564	3.692
Australia	4791	531.122	74.100	3.728	4.233
Bahrain	4199	440.493	69.331	1.236	2.419
Belgium (Flemish)	4970	508.081	68.467	2.410	2.517
Botswana	5150	360.761	91.307	2.410	3.147
Bulgaria	4117	490.590	93.483	4.752	4.876
Chile	6377	435.172	76.091	2.500	3.104
Chinese Taipei	5379	548.021	73.234	2.656	3.080
Cyprus	4002	446.831	77.578	1.548	2.088
Egypt	7095	403.353	113.591	3.830	4.391
England	2830	544.196	79.252	3.836	4.110
Estonia	4040	558.191	69.759	2.380	2.931
Ghana	5100	254.473	119.906	5.420	5.592
Hong Kong, SAR	4972	548.516	64.045	2.569	2.855
Hungary	3302	537.374	76.283	2.531	3.082
Indonesia	5762	430.747	79.439	3.672	3.821
Iran, Islamic Rep. of	4942	467.697	80.090	2.374	2.889
Israel	4318	484.991	80.039	2.692	3.025
Italy	4278	513.257	75.911	2.932	3.174
Japan	4856	530.325	67.245	1.721	2.100
Jordan	4489	472.090	74.362	3.131	3.961
Korea, Rep. of	5309	539.964	69.187	1.590	1.903
Latvia	3630	514.324	73.650	2.529	2.846
Lebanon	3814	394.578	89.658	3.771	4.041
Lithuania	4964	512.313	77.688	2.443	2.665
Macedonia, Rep. of	3893	440.452	99.928	3.834	4.316
Malaysia	5314	501.767	61.602	3.172	3.811
Moldova, Rep. of	4033	474.673	79.560	3.651	4.023
Morocco	2943	396.923	80.858	2.554	3.438
Netherlands	3065	533.877	59.591	3.102	3.164
New Zealand	3801	524.739	73.061	4.612	4.835
Norway	4133	516.537	71.811	2.491	2.693
Palestinian Nat'l Auth.	5357	438.805	80.530	2.553	3.028
Philippines	6917	376.533	110.759	5.644	5.705
Romania	4104	468.655	96.658	4.883	5.157
Russian Federation	4667	517.725	80.893	3.229	3.297
Saudi Arabia	4295	393.985	84.503	3.725	3.969
Scotland	3516	515.171	77.586	3.466	3.780
Serbia	4296	471.254	90.929	2.700	2.998
Singapore	6018	548.955	88.368	3.746	3.859
Slovak Republic	4215	523.228	83.599	3.169	3.321
Slovenia	3578	523.490	74.118	1.661	2.228
South Africa	8952	247.256	131.254	6.219	6.251
Sweden	4256	532.018	68.798	2.475	3.337
Tunisia	4931	407.803	61.401	1.535	2.022
United States	8912	531.958	78.526	2.858	2.910

Exhibit E.17 Summary Statistics and Standard Errors for Proficiency in Earth Science in the Fourth Grade

Country	Sample Size	Earth Science		Jackknife Sampling Error	Overall Standard Error
		Mean Proficiency	Standard Deviation		
Armenia	5674	449.879	84.355	3.579	3.634
Australia	4321	518.244	79.475	3.962	4.133
Belgium (Flemish)	4712	522.247	51.449	1.451	1.662
Chinese Taipei	4661	559.130	85.741	1.963	2.555
Cyprus	4328	487.048	73.140	2.283	2.544
England	3585	535.364	85.401	3.396	3.518
Hong Kong, SAR	4608	536.091	62.818	2.611	2.692
Hungary	3319	525.716	94.961	3.484	3.694
Iran, Islamic Rep. of	4352	428.096	87.072	2.900	3.007
Italy	4282	518.685	88.153	3.514	3.696
Japan	4535	534.579	78.134	1.683	1.891
Latvia	3687	534.154	70.726	2.495	2.922
Lithuania	4422	503.326	79.021	2.670	3.187
Moldova, Rep. of	3981	505.218	93.678	4.667	4.876
Morocco	4264	310.522	127.167	6.023	6.076
Netherlands	2937	502.865	75.109	2.193	2.272
New Zealand	4308	522.448	79.352	1.943	2.345
Norway	4342	472.531	96.010	2.377	2.751
Philippines	4572	323.999	152.023	9.131	9.207
Russian Federation	3963	527.221	93.505	5.875	5.975
Scotland	3936	498.056	74.558	2.582	2.592
Singapore	6668	537.778	87.719	5.012	5.212
Slovenia	3126	490.207	77.972	2.507	2.699
Tunisia	4334	336.195	124.365	4.680	4.796
United States	9829	534.850	83.083	2.340	2.505

Exhibit E.18 Summary Statistics and Standard Errors for Proficiency in Environmental Science in the Eighth Grade

Country	Environmental Science				Overall Standard Error
	Sample Size	Mean Proficiency	Standard Deviation	Jackknife Sampling Error	
Armenia	5726	416.753	105.967	4.024	4.365
Australia	4791	535.686	69.987	3.242	3.391
Bahrain	4199	438.832	88.113	1.559	3.145
Belgium (Flemish)	4970	522.824	76.228	2.518	2.694
Botswana	5150	380.758	103.741	2.676	3.298
Bulgaria	4117	463.507	96.901	4.509	5.005
Chile	6377	435.551	80.628	2.384	2.934
Chinese Taipei	5379	559.681	63.187	2.525	3.109
Cyprus	4002	440.632	90.760	1.857	2.302
Egypt	7095	429.995	106.365	3.579	4.030
England	2830	539.639	77.584	3.336	4.236
Estonia	4040	539.576	67.702	2.033	2.242
Ghana	5100	267.357	136.114	5.812	6.209
Hong Kong, SAR	4972	555.476	64.323	2.460	2.567
Hungary	3302	527.643	79.651	2.747	2.936
Indonesia	5762	453.887	78.971	3.318	3.414
Iran, Islamic Rep. of	4942	486.574	66.515	1.777	2.123
Israel	4318	486.210	84.331	2.484	2.905
Italy	4278	496.895	78.638	2.800	3.024
Japan	4856	536.744	70.759	1.709	1.972
Jordan	4489	492.397	91.950	3.138	3.238
Korea, Rep. of	5309	543.517	63.430	1.252	1.448
Latvia	3630	507.776	70.917	2.340	3.305
Lebanon	3814	374.494	116.453	4.723	5.056
Lithuania	4964	506.784	70.706	1.964	2.004
Macedonia, Rep. of	3893	442.411	99.375	3.465	3.652
Malaysia	5314	512.898	63.332	3.126	3.157
Moldova, Rep. of	4033	454.075	97.123	3.454	3.782
Morocco	2943	395.911	97.067	3.099	3.315
Netherlands	3065	538.726	61.812	2.694	2.845
New Zealand	3801	525.490	67.388	3.827	3.925
Norway	4133	495.662	68.549	2.062	2.235
Palestinian Nat'l Auth.	5357	444.190	101.761	3.362	3.703
Philippines	6917	403.486	107.450	5.196	5.374
Romania	4104	472.002	88.353	4.365	4.719
Russian Federation	4667	491.028	76.883	2.775	3.185
Saudi Arabia	4295	410.218	79.930	3.342	3.766
Scotland	3516	510.847	80.984	3.398	3.486
Serbia	4296	457.358	83.984	2.298	2.423
Singapore	6018	567.541	85.614	3.676	3.828
Slovak Republic	4215	508.600	71.164	2.630	2.758
Slovenia	3578	515.395	65.368	1.676	2.242
South Africa	8952	260.934	141.225	6.418	6.600
Sweden	4256	499.405	73.884	2.332	2.575
Tunisia	4931	435.711	69.777	1.772	2.181
United States	8912	533.048	76.347	2.690	2.926