

Appendix 4A: Summary Statistics and Standard Errors for Proficiency in Advanced Mathematics

Summary Statistics and Standard Errors for Proficiency in Overall Advanced Mathematics

Country	Sample Size	Overall Advanced Mathematics				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	462.664	7.014	2.338	9.352	3.058
Italy	3318	421.944	24.051	4.466	28.517	5.340
Lebanon	1161	531.874	7.817	1.575	9.392	3.065
Norway	2537	459.209	18.505	2.510	21.015	4.584
Portugal	4068	482.253	5.552	0.687	6.239	2.498
Russian Federation	7558	484.662	31.928	0.773	32.701	5.718
Russian Federation 6hr+ ¹	3431	540.095	59.743	1.604	61.347	7.832
Slovenia	2922	459.794	10.915	0.635	11.550	3.398
Sweden	3937	431.082	13.203	3.057	16.260	4.032
United States	2954	484.984	25.501	1.261	26.762	5.173

Summary Statistics and Standard Errors for Proficiency in Algebra

Country	Sample Size	Algebra				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	469.180	7.722	0.935	8.657	2.942
Italy	3318	414.401	24.501	1.329	25.830	5.082
Lebanon	1161	525.424	9.492	6.391	15.882	3.985
Norway	2537	446.266	16.147	0.639	16.787	4.097
Portugal	4068	494.572	5.655	1.900	7.555	2.749
Russian Federation	7558	494.682	38.602	0.533	39.135	6.256
Russian Federation 6hr+	3431	556.293	72.822	7.897	80.719	8.984
Slovenia	2922	473.548	10.763	1.331	12.095	3.478
Sweden	3937	422.083	13.076	3.442	16.518	4.064
United States	2954	478.150	23.399	1.929	25.327	5.033

¹ For advanced mathematics, the Russian Federation participated in 2015 with an expanded population that included the more specialized students assessed in 1995 and 2008.

Summary Statistics and Standard Errors for Proficiency in Calculus

Country	Sample Size	Calculus				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	465.938	7.852	2.286	10.138	3.184
Italy	3318	432.688	23.062	4.488	27.550	5.249
Lebanon	1161	543.753	7.425	7.841	15.266	3.907
Norway	2537	463.304	23.197	4.898	28.095	5.300
Portugal	4068	475.762	6.307	0.657	6.964	2.639
Russian Federation	7558	459.057	33.355	1.103	34.459	5.870
Russian Federation 6hr+	3431	513.019	59.430	4.189	63.619	7.976
Slovenia	2922	436.630	13.657	5.376	19.033	4.363
Sweden	3937	438.151	14.000	0.877	14.877	3.857
United States	2954	504.215	31.116	4.456	35.572	5.964

Summary Statistics and Standard Errors for Proficiency in Geometry

Country	Sample Size	Geometry				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	440.750	6.582	6.742	13.324	3.650
Italy	3318	413.154	25.306	7.307	32.614	5.711
Lebanon	1161	525.577	11.947	1.583	13.530	3.678
Norway	2537	472.777	16.784	4.583	21.367	4.622
Portugal	4068	463.763	7.048	3.213	10.261	3.203
Russian Federation	7558	499.940	32.884	1.136	34.020	5.833
Russian Federation 6hr+	3431	559.895	61.753	7.986	69.740	8.351
Slovenia	2922	455.854	14.264	1.495	15.759	3.970
Sweden	3937	429.982	11.180	2.227	13.407	3.662
United States	2954	454.953	27.669	4.330	32.000	5.657

Summary Statistics and Standard Errors for Proficiency in Advanced Mathematics Knowing

Country	Sample Size	Advanced Mathematics Knowing				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	475.334	6.727	0.521	7.248	2.692
Italy	3318	422.828	23.893	6.503	30.396	5.513
Lebanon	1161	542.963	7.240	12.813	20.054	4.478
Norway	2537	445.282	15.335	1.593	16.927	4.114
Portugal	4068	479.314	4.978	3.929	8.907	2.985
Russian Federation	7558	477.578	41.694	2.790	44.484	6.670
Russian Federation 6hr+	3431	537.612	77.292	0.444	77.736	8.817
Slovenia	2922	466.074	12.012	0.503	12.514	3.538
Sweden	3937	404.981	16.326	5.474	21.800	4.669
United States	2954	487.789	30.660	1.869	32.529	5.703

Summary Statistics and Standard Errors for Advanced Mathematics Applying

Country	Sample Size	Advanced Mathematics Applying				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	448.880	8.200	3.488	11.688	3.419
Italy	3318	425.189	23.585	5.751	29.336	5.416
Lebanon	1161	529.261	8.395	6.287	14.682	3.832
Norway	2537	458.975	19.848	6.366	26.214	5.120
Portugal	4068	475.842	5.482	2.863	8.345	2.889
Russian Federation	7558	490.747	35.297	2.024	37.321	6.109
Russian Federation 6hr+	3431	543.948	61.129	4.556	65.685	8.105
Slovenia	2922	464.915	10.022	5.620	15.642	3.955
Sweden	3937	434.041	11.844	1.138	12.981	3.603
United States	2954	479.594	28.578	1.551	30.129	5.489

Summary Statistics and Standard Errors for Proficiency in Advanced Mathematics Reasoning

Country	Sample Size	Advanced Mathematics Reasoning				
		Mean Proficiency	Jackknife Sampling Variance	Imputation Variance	Total Variance	Overall Standard Error
France	3967	462.245	7.175	2.539	9.715	3.117
Italy	3318	411.144	26.722	8.630	35.352	5.946
Lebanon	1161	526.658	9.979	5.610	15.589	3.948
Norway	2537	468.619	17.332	2.028	19.361	4.400
Portugal	4068	487.964	6.896	5.330	12.226	3.497
Russian Federation	7558	484.022	26.849	0.964	27.813	5.274
Russian Federation 6hr+	3431	540.789	46.446	5.724	52.170	7.223
Slovenia	2922	442.450	13.550	2.173	15.723	3.965
Sweden	3937	446.651	11.392	3.524	14.916	3.862
United States	2954	484.454	24.881	3.218	28.099	5.301