Demographics and Education: The 20 Richest Countries

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This paper explores the PISA achievement of twenty countries in light of some of their demographic differences. SES, nuclear family, gender, home language, and native status were predictive of achievement for every country. Demographics accounted for as little as 8 percent to as much as 22 percent of individual score variance depending on the country and subject. Being male was almost a universal advantage in math, but was a far greater disadvantage in reading for every country. The relative performance of some countries changed when scores were adjusted for demographic differences; however, the Asian countries and Finland remained on top. Instructional strategies related to countries performing above expectations were explored.

Anyone paying attention to comparisons of educational systems around the world would have to agree, Finland is being heralded as the best (see *Time* magazine, Levine, 2011). Although educational success can be an allusive designation to nail down, especially in the United States, the judgment seems to be in.

As within the United States, those seeking educational excellence have turned increasingly to standardized achievement tests, and the test getting much of the attention internationally is the Programme for International Student Assessment (PISA). Since publishing the results of their first round of testing in 2000, PISA has been used to analyze student achievement, currently in over 65 countries. Educators and researchers quickly noticed that students in the United States were not measuring up to countries like Finland, China, and Canada (PISA, 2006). However, many of the studies and comparisons failed to consider the amount of ethnic and socio-economic diversity among the countries. When comparing education systems and student achievement, one must consider the impact of demographic variables that are also related to achievement.

Demographics Matter

Much of the PISA research points to a relationship between student socioeconomic status (SES) and achievement (Chia & Xihua, 2008; Milford, Ross, & Anderson, 2010). Chia and Xihua (2008) found that a 10% increase in family SES was associated with a five-point increase in PISA mathematics scores with a similar relationship in science. Among students in the U.S and Canada, an SES increase of one standard deviation equated to a 27-point increase on the scientific literacy portion of the 2006 PISA (Milford, Ross, & Anderson, 2010).

Although SES has a strong relationship with student achievement, it is not the only family-level variable with predictive value. In fact, family background and structure variables may have a stronger relationship with achievement than SES (Nonoyama-Tarumi, 2008; Xia, 2009). Students residing in two-parent homes perform much higher than single-parent students (Xu, 2008; Chiu & Xihua, 2008; Hampden-Thompson & Johnston, 2006), and children born in the country of the testing perform much better than immigrant students (Hampden-Thompson & Johnston, 2006; Chiu & Xihua, 2008). Of course, these factors have varying levels of predictive value depending upon the country being studied, and, interestingly, and family structure variables were more predictive of achievement scores in richer and more individualistic countries, like the United States (Chiu & Xihua, 2008).

In response to a previous PISA report, Susan L. Traiman, the Director of Education and Workforce Policy at the Business Roundtable, stated, "Demography is not destiny (Cavanagh, 2007)." However, demographics *do* matter. Although the average SES of a school is related to students achievement, the individual SES of the student matters about four times as much (Perry & McConney, 2010). When comparing states in the United States, demographic differences accounted for well over half of the achievement difference among states (NAEP R^2=.67 and .70, SAT R^2= .95, Author, 2010). These demographic differences at the state, school, and classroom levels can render evaluations of educational quality invalid. Ignoring demographic differences across countries also calls into question the actual quality of the education systems and policies at the international level.

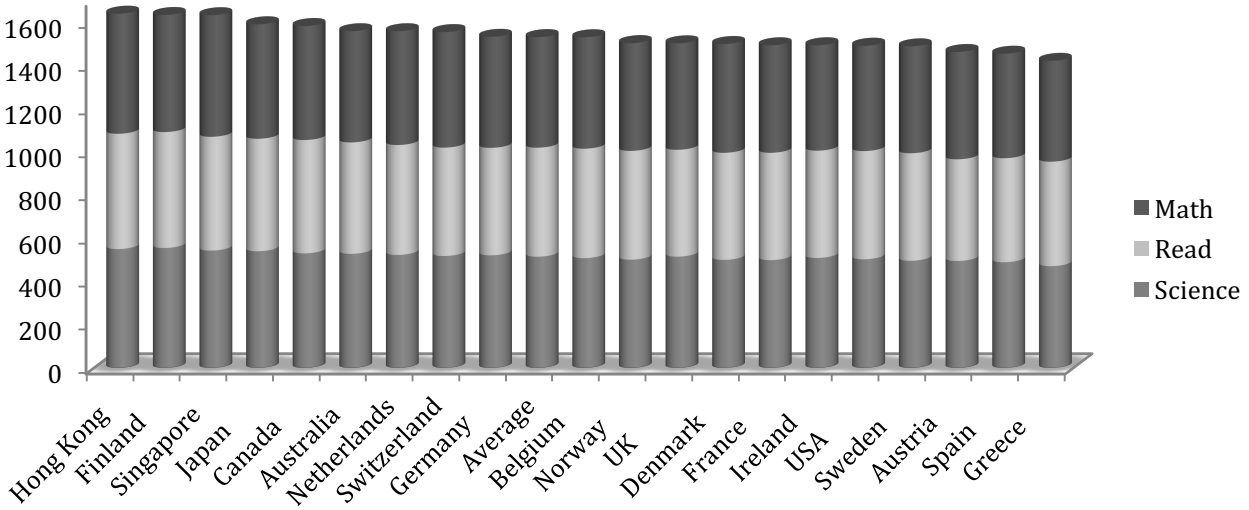
The purpose of this study was to explore educational achievement and demographics for the twenty riches countries by:

1. Comparing the countries based on achievement and demographics,
2. Identifying the relative contribution of demographics to achievement scores,
3. Considering countries' performance and rankings when adjusting achievement based on demographics, and
4. Further explore gender as a factor when comparing countries achieving above and below expectations.

Method

The achievement scores in math, reading, and science, demographic information, and additional information were drawn from the individual level PISA database for 2009. The countries chosen were the 20 richest countries based on GDP with populations over four million (for countries see Figure 1). This was a similar approach to that taken by the Equity Trust (2010). Demographic factors included the PISA SES index, and whether or not the student was a male, from a nuclear family, was a native of the test country, and whether the language of the test was spoken at home. The International Socio-Economic Index of Occupational Status included the highest level of education of the student's parents, the PISA index of home educational resources, and the PISA index of family possessions (OECD. 2010). The index has a mean of zero and a standard deviation of one.

Figure 1. PISA (2009) Scores by Country



Means and standard deviations were generated for the scores and variables for simple comparisons of countries. To determine the variance attributable to the demographic variables, they were included in multiple regression equations predicting achievement for math, reading, and science (separately) run separately for each country. These analyses yielded a constant or base score to which the weighted demographic factors could be added. The R^2 and estimates were interpreted to explore demographics related to achievement. A value-added approach was used to create a measure of Demographics Adjusted Performance (DAP) for each country (Marchant, Ordonez-Morales, & Paulson, 2010-2011). This metric indicated the degree the country performed above or below expectations based on the demographics of the students.

Because of the nature of the PISA data most analyses were done using AM software that took into account 80 BRR-FAY replicate weights, a cluster variable, a final student weight, and five plausible values for each score.

Results

Demographic Differences between Countries

All countries are not created equal (see Table 1). This lack of "equality" in demographic categories makes comparisons of educational quality difficult. Among the richest countries there was diversity in social, cultural (SES) wealth of the test-takers with lower SES in Hong Kong, Singapore, and Spain, and higher in Canada, Norway, and Finland. There was not much variation in the percent of test-takers from nuclear families, although the lowest two countries were the United States and the United Kingdom.

As would be expected, there was little variation in gender percentages; however, Hong Kong did have 53% males and Japan had 52%. The highest percentages of test-takers

Table 1

Means and Standard Deviations for PISA Scores and Demographics by Country

Country	Weighted *N*	PISA Scores			SES	Nuclear Family	Gender Male	Home Lang.	Native
		Math	Read	Science					
Australia	240851	514	515	527	.35	.80	.49	.91	.77
		(94)	(99)	(101)	(.75)	(.40)	(.50)	(.29)	(.42)
Austria	87326	496	470	494	.11	.83	.48	.90	.89
		(96)	(100)	(102)	(.81)	(.37)	(.50)	(.30)	(.32)
Belgium	119140	515	506	507	.25	.82	.50	.79	.87
		(104)	(102)	(105)	(.91)	(.39)	(.50)	(.41)	(.34)
Canada	360286	527	524	529	.51	.82	.50	.86	.76
		(87)	(90)	(90)	(.82)	(.38)	(.50)	(.35)	(.43)
Denmark	60855	503	495	499	.32	.83	.49	.96	.93
		(87)	(84)	(92)	(.86)	(.38)	(.50)	(.20)	(.26)
Finland	61463	541	536	554	.37	.79	.49	.96	.98
		(82)	(86)	(89)	(.78)	(.41)	(.50)	(.19)	(.16)
France	677620	497	496	498	-.11	.80	.48	.93	.88
		(101)	(106)	(103)	(.83)	(.40)	(.50)	(.25)	(.32)
Germany	766993	513	497	520	.25	.82	.49	.90	.85
		(98)	(95)	(101)	(.87)	(.38)	(.50)	(.30)	(.36)
Greece	93088	466	483	470	-.01	.87	.49	.96	.92
		(89)	(95)	(92)	(.99)	(.34)	(.50)	(.21)	(.28)
Hong Kong	75548	555	533	549	-.80	.86	.53	.93	.61
		(95)	(84)	(87)	(1.02)	(.35)	(.50)	(.26)	(.49)
Ireland	52794	487	496	508	.06	.84	.50	.94	.92
		(86)	(95)	(97)	(.84)	(.37)	(.50)	(.24)	(.27)
Japan	1113403	529	520	539	.00	.85	.52	1.00	1.00
		(94)	(100)	(100)	(.72)	(.36)	(.50)	(.05)	(.05)
Netherlands	183546	526	508	522	.32	.85	.50	.94	.90
		(89)	(89)	(96)	(.83)	(.36)	(.50)	(.24)	(.31)
Norway	57367	498	503	500	.48	.84	.51	.93	.93
		(85)	(91)	(90)	(.74)	(.37)	(.50)	(.26)	(.25)
Singapore	51874	562	526	542	-.42	.87	.50	.41	.86
		(104)	(97)	(104)	(.80)	(.34)	(.50)	(.49)	(.35)
Spain	387054	483	481	488	-.31	.85	.51	.82	.91
		(91)	(88)	(87)	(1.09)	(.35)	(.50)	(.38)	(.29)
Sweden	113054	494	497	495	.35	.83	.50	.92	.90
		(94)	(99)	(100)	(.80)	(.37)	(.50)	(.27)	(.30)
Switzerland	80839	534	501	517	.11	.82	.50	.85	.79
		(99)	(93)	(96)	(.87)	(.39)	(.50)	(.36)	(.41)
UK	683380	492	494	514	.21	.77	.49	.94	.90
		(87)	(95)	(99)	(.79)	(.42)	(.50)	(.24)	(.30)
USA	3373264	487	500	502	.19	.73	.51	.87	.81
		(91)	(97)	(98)	(.93)	(.45)	(.50)	(.33)	(.39)
All	8074770	501	502	511	.14	.79	.50	.90	.86
		(95)	(97)	(99)	(.89)	(.41)	(.50)	(.30)	(.35)

speaking the tested language at home were from Japan, Denmark, Finland, and Greece, with the lowest percentage coming from Belgium and Singapore. The highest percentages of test-takers native to their country were from Finland, Denmark, and Norway, and the smallest percentage of native test-takers were from Hong Kong, Canada, and Australia.

Demographics and Achievement within Countries

How demographics relate to achievement is the first step in determining whether the education system for a country is overcoming disadvantages or simply has a demographical advantage. For all of the test-takers across countries demographics accounted for about 16 percent of the individual level achievement variance (see Tables 2-4, Math R^2 = .16, Reading R^2 = .17, Science R^2 = .15, p < .001 for all). However, some countries had a larger or smaller relationship, and that relationship was not consistent across the content areas. For example, demographics accounted for a similar amount of variance in the U.S.A. and Norway in reading (R^2s of .16 and .17 respectably); however, in math and science demographics play less of a role in Norway (R^2s of .12 and .13) than the U.S. (R^2s of .17 and .16). Another example is Finland, where demographics have a similar relationship with achievement in math and science, but accounted for twice the variance in reading (R^2 = .20, p < .001). Because of this, results are reported separately for each content area.

Math. Demographics played a larger role in math achievement for students in Belgium, France, and Germany than Finland, Hong Kong, and Japan (see Table 2), with Finland, Hong Kong, and Japan averaging almost 20 points higher on the math test. The fact that the base score/constants (before adjustments for demographics) for Finland, Hong Kong, and Japan were higher by an average of more 29 points suggested factors beyond demographics played a role in the math achievement differences. (More on demographics adjusted achievement later.)

The SES Index was related most to achievement in France and Australia and least to achievement in Finland and Spain. Coming from a nuclear family was more associated with math achievement in Finland, Greece, and Ireland, but not a significant factor in Denmark, Norway, U.S.A, and the U.K. Being male was most associated with math achievement in Belgium, the U.S.A., and the United Kingdom, but was not a significant factor for Sweden, Finland, and Norway. Having the test in the same language as spoken at home and being a native of the country was not significantly related to math achievement for almost half of the countries. Home language was most related to math achievement for Hong Kong, and being a native was most related to math achievement for Belgium and Spain. These differences likely reflect cultural and immigration characteristics for the countries.

Reading. As with math, demographics are more related to reading scores for Belgium, France, and Germany than for Japan, Canada, and Hong Kong (see Table 3). Of the high scoring, low demographic association countries, Japan stands out for its low base score. With nearly 100% of the students being natives speaking the test language at home and 85% being in nuclear families, the lack of variance does not produce much predictive power, but again suggests a cultural advantage for these students.

As with math, SES had the strongest relationship to reading achievement in France and Australia. SES made the smallest contribution for Hong Kong. Coming from a nuclear family made a big difference in Greece and Singapore, but was not significant in the

Table 2

Multiple Regressions with Estimates for Demographics Predicting PISA Math Scores Individually for Each Country

Country	R^2	Base/ Constant	SES Index	Nuclear Family	Gender Male	Home Lang	Native
Finland	.09	466	26	19	4^{ns}	22	29
Hong Kong	.10	505	25	15	14	59	-7^{ns}
Japan	.10	496	36	18	12	46^{ns}	-32^{ns}
Canada	.11	493	31	15	13	-2^{ns}	6^{ns}
Norway	.12	441	35	6^{ns}	4^{ns}	44	-6^{ns}
Australia	.15	507	44	11	11	-11^{ns}	-11
Denmark	.15	447	32	4^{ns}	15	13^{ns}	31
Greece	.15	404	29	19	12	33	14^{ns}
Ireland	.15	435	35	19	9	27	10^{ns}
Netherlands	.15	484	34	15	16	1^{ns}	19^{ns}
Singapore	.16	571	41	18	8	20	-18
Sweden	.16	443	39	10	0^{ns}	14	25
Austria	.17	453	40	9	19	7^{ns}	26
Spain	.17	433	28	12	19	-1^{ns}	47
UK	.17	456	41	3^{ns}	22	13	8^{ns}
USA	.17	456	41	3^{ns}	22	16	8^{ns}
Switzerland	.19	475	36	13	21	26	24
Germany	.20	471	41	11	15	16	17
Belgium	.22	450	41	17	24	3^{ns}	45
France	.22	454	48	9	17	17^{ns}	26
All 20	.16	458	35	25	14	17	11

Note. All estimates significant at $p < .05$ or less, except as noted

Netherlands, Norway, Denmark, Austria, Switzerland France, and Germany. Being male was significantly associated with reading in a negative way for every country. Whereas the average estimate for being male contributing to math achievement was 7, the average estimate across countries was -31 for reading (more on gender comparisons later). Speaking the test/school language at home added the most to reading achievement for students in Hong Kong and Japan and being a native to the country added the most to reading achievement for students from Spain and Belgium.

Science. Once again the same countries had achievement least related to demographics, Japan, Hong Kong, Finland, and Canada; and the same countries have achievement most related to demographics, France, Switzerland, Belgium, and Germany (see Table 4). SES added the most to science achievement for Australia, the UK, the USA, and France; and it added the least in Hong Kong. Coming from a nuclear family mattered more in Greece and Singapore than in Norway, Sweden, Denmark, and Austria, where it was not a significant factor. For science achievement, gender was not a significant factor for half of the countries. Surprisingly, being male provided a significant advantage in the UK, the USA, Denmark, and Belgium, but was a significant disadvantage in Finland, Greece, and Japan. As before, speaking the test language at home was a big factor for Japan and Hong

Table 3

Multiple Regressions with Estimates for Demographics Predicting PISA Reading Scores Individually for Each Country

Country	R^2	Base/ Constant	SES Index	Nuclear Family	Gender Male	Home Lang	Native
Japan	.12	477	37	12	-36	54^{ns}	1^{ns}
Canada	.13	512	30	11	-33	16	-7
Hong Kong	.13	507	20	9	-32	65	-13
Netherlands	.14	499	34	8^{ns}	-24	-1^{ns}	12^{ns}
Australia	.16	515	44	10	-35	10^{ns}	14
UK	.16	472	43	6	-23	28	-2^{ns}
USA	.16	472	43	6	-23	28	-2^{ns}
Norway	.17	470	34	6^{ns}	-48	36	5^{ns}
Spain	.18	461	27	6	-29	2^{ns}	42
Denmark	.19	460	33	5^{ns}	-30	20	22
Ireland	.19	469	38	16	-38	16^{ns}	22
Austria	.20	469	43	-2^{ns}	-42	16^{ns}	16^{ns}
Finland	.20	473	29	11	-54	45	29
Singapore	.20	532	37	21	-29	29	-3^{ns}
Sweden	.20	457	38	13	-44	27	22
Switzerland	.20	490	35	4^{ns}	-39	26	9
Greece	.21	438	30	26	-49	38	16^{ns}
Belgium	.22	471	41	11	-24	9	36
France	.22	482	47	6^{ns}	-39	31	13^{ns}
Germany	.22	485	38	6^{ns}	-40	21	15
All 20	.17	488	36	21	-31	14	1^{ns}

Note. All estimates significant at $p < .05$ or less, except as noted

Kong. Being a native to the country helped the most in Belgium and Spain.

Demographics Adjusted Performance and Rankings

The DAP scores indicated which countries were performing above and below expectations base on the demographic factors (see Table 5). Although Finland dropped from second to third, the three top achieving countries were also the three top countries when demographics were considered. Switzerland, France, and Australia did better than expected based on the demographics of their students. Greece not only was the lowest achieving country, but also scored more than 20 points below expectation in each subject area. Enjoying the biggest positive change in the rankings due to adjusting performance by demographics was Australia (10 places), Spain (6 places), France (4 places), and Switzerland (2 places). For these countries, their initial educational rankings were depressed by the nature of the students they served. The countries that should have performed better and dropped in rank were Austria (9 places), Norway (6 places), Sweden (3 places), and Denmark (2 places).

Table 4

Multiple Regressions with Estimates for Demographics Predicting PISA Science Scores Individually for Each Country

Country	R^2	Base/ Constant	SES Index	Nuclear Family	Gender Male	Home Lang	Native
Japan	.08	451	33	20	-8^{ns}	62^{ns}	18^{ns}
Hong Kong	.09	504	21	13	3^{ns}	64	-13
Canada	.10	484	30	18	6	12	7
Finland	.10	461	28	13	-14	43	39
Norway	.13	431	36	4^{ns}	-5^{ns}	40	18
Australia	.14	504	46	12	1^{ns}	7^{ns}	-6^{ns}
Ireland	.14	450	38	14	0^{ns}	53	1^{ns}
Greece	.15	421	30	22	-12	31	11^{ns}
Netherlands	.15	481	36	11	4^{ns}	2^{ns}	29
Spain	.16	447	27	7	8	1^{ns}	45
Sweden	.16	429	39	9^{ns}	-2^{ns}	25	32
UK	.16	474	46	6	11	27	0
USA	.16	474	46	6	11	27	0^{ns}
Denmark	.17	424	35	6^{ns}	11	28	35
Austria	.18	449	43	2^{ns}	9^{ns}	24	27
Singapore	.18	543	42	22	2^{ns}	27	-13
France	.19	459	46	7	4^{ns}	24	24
Switzerland	.19	466	35	8	8	28	25
Belgium	.21	449	39	15	10	4^{ns}	48
Germany	.22	465	40	9	7	28	29
All 20	.15	466	36	12	7	13	14

Note. All estimates significant at $p < .05$ or less, except as noted

Gender Differences and Achievement

Across subject areas the relationship of demographics to individual achievement was very similar (R^2 = .16, .17, .15; see Tables 2 - 4). Even the contribution of different demographic factors was fairly consistent across subject areas, except one. The role of gender related to math and reading achievement merited special consideration. On average, being male contributed 14 points to math achievement across countries (ranging from 0 to 24). However, being male decreased the reading score by an average of 31 points across the countries (ranging from -23 to -54). The relationship for science was smaller and mixed.

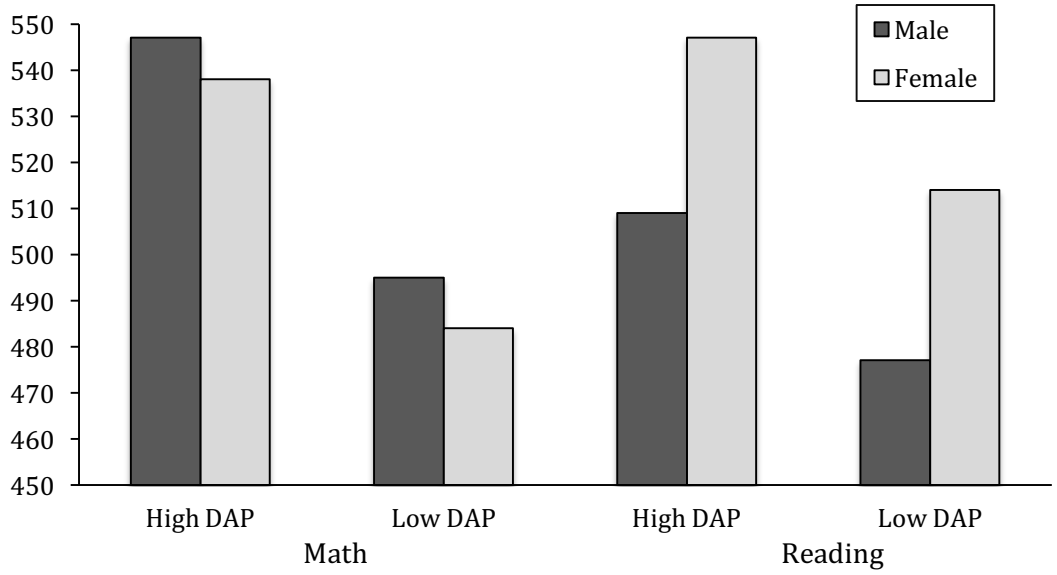
To further explore the relationship of gender to achievement, the top 6 DAP counties (those performing above expectations) were compared to the bottom seven DAP countries (those performing below expectations). The gender differences for both the over and under achieving groups were quite similar (see Figure 2). In math, females score 9 points lower in the high DAP countries and 11 points lower in the low DAP countries. In reading, males score 38 points lower in the high DAP countries and 37 points lower in the low DAP countries.

Table 5

Demographics Adjusted Performance (DAP) Scores and Rankings

Ave. Rank DAP (Scores)	Country	Math			Read			Science		
		Score (Rank)	Pred. Score (SD)	DAP (Rank)	Score (Rank)	Pred. Score (SD)	DAP (Rank)	Score (Rank)	Pred. Score (SD)	DAP (Rank)
1.00 (2.00)	Hong Kong	555 (2)	467 (38)	88 (1)	533 (2)	475 (41)	58 (1)	549 (2)	482 (41)	67 (1)
2.00 (2.33)	Singapore	562 (1)	476 (32)	86 (86)	526 (3)	482 (38)	44 (2)	542 (3)	492 (34)	50 (2)
3.33 (1.67)	Finland	541 (3)	505 (31)	36 (4)	536 (1)	518 (35)	18 (3)	554 (1)	528 (32)	26 (3)
4.33 (4.67)	Japan	529 (5)	494 (30)	35 (5)	520 (5)	505 (33)	15 (4)	539 (4)	516 (29)	23 (4)
5.33 (7.67)	Switzerland	534 (4)	496 (34)	38 (3)	501 (10)	506 (38)	-5 (8)	517 (9)	515 (37)	2 (5)
6.33 (5.00)	Canada	527 (6)	510 (33)	17 (7)	524 (4)	521 (36)	3 (5)	529 (5)	529 (34)	0 (7)
6.67 (14.33)	France	497 (13)	488 (33)	9 (11)	496 (14)	500 (36)	-4 (7)	498 (16)	509 (35)	-11 (12)
7.00 (17.33)	Australia	514 (9)	504 (31)	10 (10)	515 (6)	516 (34)	-1 (6)	527 (6)	524 (32)	2 (5)
8.33 (7.00)	Netherlands	526 (7)	504 (33)	22 (6)	508 (7)	516 (36)	-8 (10)	522 (7)	526 (35)	-4 (9)
9.67 (9.33)	Belgium	515 (8)	500 (36)	15 (8)	506 (8)	511 (38)	-5 (8)	507 (12)	520 (38)	-13 (13)
10.33 (10.00)	Germany	513 (10)	501 (34)	12 (9)	497 (12)	513 (37)	-16 (14)	520 (8)	521 (37)	-1 (8)
13.00 (14.00)	Ireland	487 (17)	495 (33)	-8 (16)	496 (14)	507 (36)	-9 (12)	508 (11)	516 (33)	-8 (11)
13.00 (19.00)	Spain	483 (19)	482 (41)	1 (12)	481 (19)	492 (44)	-11 (13)	488 (19)	502 (42)	-14 (14)
13.67 (13.67)	USA	487 (17)	497 (38)	-10 (17)	500 (11)	508 (41)	-8 (10)	502 (13)	516 (41)	-14 (14)
15.00 (14.33)	UK	492 (16)	499 (33)	-7 (15)	494 (17)	511 (35)	-17 (15)	514 (10)	520 (33)	-6 (10)
16.33 (7.00)	Austria	496 (14)	496 (32)	0 (13)	470 (20)	508 (36)	-38 (20)	494 (18)	517 (34)	-23 (16)
16.33 (14.00)	Denmark	503 (11)	504 (34)	-1 (14)	495 (16)	516 (37)	-21 (18)	499 (15)	526 (36)	-27 (17)
17.67 (11.67)	Norway	498 (12)	510 (30)	-12 (19)	503 (9)	521 (33)	-18 (16)	500 (14)	531 (31)	-31 (18)
17.67 (14.67)	Sweden	494 (15)	505 (33)	-11 (18)	497 (12)	517 (36)	-20 (17)	495 (17)	526 (34)	-31 (18)
19.67 (19.33)	Greece	466 (20)	494 (37)	-28 (20)	483 (18)	505 (40)	-22 (19)	470 (20)	515 (39)	-45 (20)

Figure 2 Math and Reading Scores by Gender for Six Countries Achieving above Expectations and Seven Countries Performing below Expectations.



Discussion

Simply looking at the scores for the various countries does not indicate which country does the best job of educating its students; it only demonstrates how well the students perform for whatever reason. The reasons are many and most do not have an accurate measurement for statistical consideration. For example, are the parents warm and nurturing or "tiger moms?" Do the parents and culture value education? Are achievement expectations different because of race or gender? How is immigration and language differences influencing learning? The list of questions like these is almost endless. Yet these questions are often ignored and countries compared like students were randomly assigned their citizenship and schools performed in isolation of their country's culture. The earth is not flat and the playing field for academic achievement is not level, within countries nor across them. The overriding question this study attempted to tease out was, how are some of these measured demographic differences related to achievement differently across counties?

In a recent interview, Harvard researcher Tony Wagner was asked about the appropriateness of U.S. comparisons with Finland considering the diversity of the U.S. (Sirota, 2011). Truth be told, before conducting this study I anticipated calling it, "Finland Sucks!" I figured that if you controlled for demographics, the lack of poverty and other detrimental factors were responsible for inflated test scores rather than a quality educational system. I also thought that the USA might shine a little brighter if SES were added into the equation. Well, not so much. Finland dropped from second to third, and the US went from sixteenth to fourteenth. Shifting a spot or two in the rankings is neither

cause for celebration nor despair. However, performing not as well as expected based on the nature of students, should be a cause for some concern and exploration.

The fact that Hong Kong, Japan, and Singapore had some of the lowest SES indices and some of the highest achievement says something about their culture and their education system. When Scandinavian countries like Norway, Sweden, and Denmark had relatively low achievement and performed worse than expected, Finland continues to shine. The countries of the world are not all dealt winning hands in education, but how they play the cards they are dealt really reflects the quality of their education system. In Hong Kong, Japan, Canada, and Finland the demographic characteristics of the students have about half the relationship to achievement as in Belgium, Germany, and France. Further research needs to be done to explore the interaction of culture and education that allows some countries to overcome conditions that are serious detriments to others. When controlling for other demographic factors, there was one characteristic that proved detrimental across all countries. Gender counted for as much as a 24 point difference in math, and in the United States much has been made of girls catching up for lagging performance in math. However, that was not the big story from this data. The universal poor performance in reading by 15-year-old boys was staggering. Averaging 31 points lower than girls, and reaching as much as a 54-point difference. For 9 of the 20 countries, including the USA, being a boy was a greater disadvantage for reading than having a poor SES. Finland did not suck, however the relative performance of their male students did. This suggests that one of the best ways to improve education in these countries is to focus on improving the reading skills of male children.

Demographics matter, and countries that succeed educational do so by overcoming the detriments of their disadvantaged students. Unfortunately this study did little to address how the different countries do this. Why is the gender difference in Finland the largest for any country in reading, but not significant in math? Why is SES the least related to achievement in every subject for Hong Kong? Why do demographics, SES in particular, have such a strong relation to achievement in Belgium, France, and Germany? And what can the United States learn from these other countries? Every country is exclusively unique, and yet, every country shares the common goal of educating its children if the face of demographic considerations that pose similar challenges. Facing these challenges is not a competition, but a common goal for the world.

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