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The Impact of Teachers and Schools on Educational Achievement

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Abstract

This paper examines which major educational factors have a significant effect on standardized test scores as an objective measure of educational outcomes. The empirical model includes individual student, school, and teacher factors that can impact the quality of a student's education. For the purposes of this paper, individual factors will be controlled for (e.g. living environment, socioeconomic status) and focus will be directed towards how teachers and schools themselves impact the quality of education. Since teachers and schools can mold themselves in the light of policies and new research, this paper will show what factors that teacher and schools have control over are beneficial to students. Quality of education will be measured through objective standardized test scores for reading, math, science, and history subjects as well as an average of the four subjects. This research can even be compelling even if certain factors have a significant positive impact on one or two subjects instead of all four of them thus sparking research into why these differences exist. This paper hypothesizes that the characteristics that are associated with teachers and the schools will have a significant impact on a student's standardized test scores while controlling for individual characteristics.

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Deming Payne

I. Introduction

One of the most important issues that will impact America's global competitiveness in the world is the quality of education students receive. In order to ensure a higher quality of life for students today, it is imperative that the United States invest in their education. Over 700 billion dollars is spent annually on education in this country. Of this amount, 500 billion dollars is spent specifically on primary and secondary educations which are the essential types of education that are the building blocks for a solid educational foundation (NCES). It is an issue that most people agree is important and needs research in order to figure out how we can raise the quality of education. However, it is often heavily debated and unclear as to how education spending can be best put to use in creating a more intelligent and capable generation of students. The purpose of this paper is to determine where to allocate education funds in order to have the greatest positive effect on a student's educational outcomes.

Despite the high American standard of living, the country is usually far down on the list of country rankings in educational quality. America is fifteenth worldwide for reading proficiency, eighteenth for mathematical proficiency, fourteenth for science proficiency, and ninety-sixth for geographic and historical aptitude (OECD). While the United States is still in the top quartile of proficiency in reading, math, and science, it is disconcerting given that the United States spends $7,764 per primary student per year which is the third highest in the world (OECD). The issue with this is not that spending is high, but that we spend so much money on education per student and we do not see the educational achievements that we expect with our high spending. Norway is ranked thirteenth in reading proficiency, sixteenth in mathematical proficiency, twelfth in science proficiency, and seventy-seventh in geographic and historical aptitude (OECD). Norway holds these ranks while only spending $6,605 per primary student per year. It is clear that higher spending is not an indicator of a better education and it is important to look into what characteristics affect a student's educational achievement.

This paper examines which major educational factors have a significant effect on standardized test scores as an objective measure of educational outcomes. The empirical model includes individual student, school, and teacher factors that can impact the quality of a student's education. For the purposes of this paper, individual factors will be controlled for (e.g. living environment, socioeconomic status) and focus will be directed towards how teachers and schools themselves impact the quality of education. Since teachers and schools can mold themselves in the light of policies and new research, this paper will show what factors that teacher and schools have control over are beneficial to students. Quality of education will be measured through objective standardized test scores for reading, math, science, and history subjects as well as an average of the four subjects. This research can even be compelling even if certain factors have a significant positive impact on one or two subjects instead of all four of them thus sparking research into why these differences exist. This paper hypothesizes that the characteristics that are associated with teachers and the schools will have a significant impact on a student's standardized test scores while controlling for individual characteristics.

II. Literature Review

Since over 87,000 of the 119,500 schools in America are public, the vast majority of schooling is funded through tax revenue (NCES, 2010). As a result, local and state governments as well as district school boards often have to make decisions as to how to allocate the funds they get from their budget. They also have to make decisions as to what policies and incentives to put into effect so that schools as well as teachers can perform to the best of their abilities. One would expect that more regulation in the schools put in effect by local and state legislative bodies will help with student educational attainment and intellect. However, Husted and Kenny (2000) found the exact opposite. They found that the productivity of education is inhibited by governments in two ways: efforts to reduce inequality in education and more regulation.

With regards to educational inequality, state and local governments have undergone several court orders, law suits, and even public pressure to create more equal educational opportunities for primary and secondary education students. To accomplish this, the state and local governments have limited the variation across school districts in spending. Husted and Kenny (2000) explain that the people who vote in the school districts for school-related matters, mostly parents, are less incentivized to go out and vote because they have no more reason to closely monitor the schooling because of the equal opportunity regulatory practices that were being passed. This created a sense of trust in the school system which put less control in the hands in the voters and not everyone's voices

were heard in school-related matters. Similar implications were given to general regulatory laws passed by state and local governments. The authors controlled for school and parental inputs and tested for the number of policies passed by a government. The higher the number of regulatory policies passed, the lower the SAT test scores were for students. This article showed that inputs into the school system generated higher test scores free of regulation. Therefore, it is not necessary to consider state and local funding implications for the purposes of this paper.

According to Rivkin, Hanushek, and Kain (2005), teacher quality is a significant determinant of student success and school quality. Teacher quality was assessed through specific characteristics that were used in value-added models and were observed from the fourth grade until the seventh grade. These characteristics included years of experience and types of degrees as well as more detailed teaching methods that were scored. The article also looked at the class size to determine what effects it might have. They expected that a small class will create a more intimate learning environment and therefore a better quality of education. A larger class would be more difficult for the teacher to maintain control over and teachers might not be as interested in the success of their students when losing the intimacy. The article found that both a smaller class size and more years of teaching experience produced modest yet significant improvements in student performance. However, the results were significant in only fourth and fifth graders and the study was done at only Texas public schools. Class size and years of teaching experience will still be used in my empirical model because this paper is focused on eighth graders nationwide instead of a state-level focus. As for level of education that the teacher has, there was no significant effect on student performance according to Rivkin, Hanushek, and Kain (2005). They showed that teachers with a master degree were not necessarily better teachers than teachers with just a bachelor's degree.

Carrell and West (2010) also found compelling results when looking into teacher experience. They found that students performed better with experienced teachers in advanced classes where the opposite is true for inexperienced teachers teaching advanced classes. The performance gap is not that experienced teachers are necessarily better teachers than inexperienced ones, but that inexperienced teachers are much more sensitive to quality assessments and as a result are more focused on a curriculum that is based on having students passing tests. Instead of teaching a more comprehensive curriculum that teaches students how to think instead of just straight memorization, inexperienced teachers tend to "teach to the test" so when the students get tested, they do better and as a result the teacher gets a passing grade. Teacher quality assessments also incentivize them to inflate grades on a curve or reduce the academic content that they teach. As a result, the students are more restricted to learning what will be on the test instead of a more thorough and comprehensive learning environment.

A factor that is integral to teacher quality and thus student performance is teacher salary. One would reason that higher paid teachers would mean better performing students. However, Hanushek, Kain, and Rivkin (1999) found that teacher salary did not have a significant impact on student performance. They only found significance in districts where there was a lot of hiring. However, they did find a significant effect where only experienced teachers were considered when testing for the effect salary has on student performance.

Another component that can impact student performance is the number of days in a school year. It is reasonable to assume that longer school years will contribute to better performance because there is more time to not only teach the necessary material but to have a more comprehensive and thorough learning curriculum. Schroeder (2007) did a study where she compared students in poverty in both full-day and half-day kindergarten classes. The study was done in an urban public school setting where quality of education is generally the lowest. What Schroeder discovered was that the impoverished students in full-day kindergarten programs achieved significantly higher test scores in both reading (+18.6 points) and math (+25.1 points) than students who participated in half-day kindergarten programs. What is most compelling is that the significant difference in the scores of the two groups was roughly equal to the difference in impoverished and non-impoverished students. On average, students from more privileged backgrounds did 22.6 points better in reading and 23.2 points in math. The increase in test scores from half-day to full-day kindergarteners was almost equal to that of the difference in scores of impoverished and more privileged students. While this paper is focusing on number of school days instead of length of school days, the reasoning behind why the achievement gap narrows between full-day and half-day schools can be explained in terms of the amount of schooling the student receives. Whether that time is increased in terms of longer school days or longer school years, the effect ought to be the same.

Socioeconomic status is one of the most significant factors in explaining a student's high academic performance. Because of significance, it will be controlled for in this study even though state and local governments as well as school boards do not have control over it and therefore cannot be used to increase academic performance. However, it is necessary to include in the model as a control variable. There have been several research articles done that shows a strong correlation between socioeconomic status (SES) and academic achievement. Terwilliger and Magnuson (2003) found that the achievement gap in test scores between students of different SES and English proficiency was drastically reduced. They showed that the reports of racial achievement gaps in student test scores were misleading because they did not take into account SES and English proficiency. Schools are often chastised for having this gap, but it has never been a racial issue. It was more of an issue about SES and English proficiency so SES will be controlled for the purposes of this paper in terms of household income.

Two of the main causes that SES has on test score achievement gaps are the environment that the student lives in and the genetic makeup of the student. Turkheimer et. al (2003) used identical twins, many being impoverished, to find a relationship between heritability of intellect and the role their environment had on academic performance. Oddly enough, they found that intellect in impoverished families

had almost no correlation to their academic performance whereas intellect in affluent families had a 60% correlation to academic performance. The authors attributed this finding to the fact that both environment and genes have an impact on a student's academic performance, although living in an impoverished community has a greater negative impact and high quality inherited traits have a greater positive impact in affluent communities. Since Turkheimer et. al. (2003) showed that genetics play a significant role in affluent families, it can be reasoned that the intellect of the student's parents tends to be inherited by the student. A household with higher income is correlated with parents of higher intelligence that can be passed down to their children. Additionally, the community that the child is raised in might impact the child's performance. Therefore, both household income and the setting that the child lives in will be controlled for.

Additionally, people of higher affluence are more likely to send their children to a private school because of the higher tuition versus public schools. Peterson and Llaudet (2006) found that students who attended private schools outperformed public school students in both reading and math at every grade level from first through eighth grade. Therefore, not only the SES and setting will be controlled for in this study, but whether the school is private or not. Since all three of these factors are very significant and the fact that school boards and governmental bodies cannot adjust or regulate them, it is important to control for these factors in order to determine what educationally specific factors contribute to higher academic performance.

Lastly, it is necessary to mention unobservable variables that take place in the classroom or at home that might cause biases in the regression analysis. While this might pose a problem in the context of this paper, Goldhaber and Brewer (1996) assessed the significance of unobservable variables in the classroom by formulating a regression that will assess predicted values of test scores given their data sampling against actual values of test scores. They found that there was no significant difference between their predicted values of tenth-grade mathematics test scores versus the actual test scores values. This suggests that the omission of unobservable variables does not cause biased estimates in a standard educational production function.

III. Theoretical Model

The theoretical framework that can best suit the objective of this paper can be generated by a production function. Because it is necessary to look for inputs that have a relationship with the output of standardized test scores, this is a very reasonable way to approach the research question. Going one step further, this can be related to a production function of human capital theory. Human capital refers to the productive capacities of human beings as income producing agents in an economy (Rosen, 2008). In other words, it is an umbrella term that encapsulates the concepts of intelligence, experience, and innate talent and ability. Human capital is an output that is produced by these intangible yet measurable inputs. Because the whole purpose of an education is to enhance a child's intelligence and earning potential, my hypothesis is related directly to human capital. Human capital theory is a theory which explains the effects of introducing inputs into a human being and seeing the effect it has on output. Human capital inputs respective to this research paper consists of the individual, school, and teacher characteristics that were mentioned previously. The human capital outputs for the purposes of this paper are standardized test scores. By measuring and testing the relationships between the inputs being used with the output, the inputs with the greatest effect on standardized test scores can be determined.

There has been a lot of literature that focuses on specific types of inputs that are related to standardized test scores such as teacher salary, class size, socioeconomic status of the child's parents, etc. (Todd, 2006), but this paper will look at all of these factors and look for relationships between the inputs themselves and the output. Even though it is interesting to look into as many factors as possible, it is particularly compelling to see what educational factors, including school and teacher components, have an impact on a child's education. Since there is not much that can be changed with regards to the individual child and the familial environment they are raised in, it is necessary to see what local and state governments as well as school districts can do to ensure higher educational achievement. Components such as teacher salary, class size, and number of school days can be manipulated according to district, local, and state policies. The production function expressed in terms of the research hypotheses can be illustrated as such:

TestScores = f(Individual Inputs, School Inputs, Teacher Inputs)

To put it in context, test scores will be determined as a function of individual, school, and teacher factors that will be elaborated upon in the empirical model.

Since most of the policies implemented among these governing bodies are affiliated with tax revenues, these bodies can allocate their funding towards specific inputs that will have a higher return with respect to the standardized test scores of students. For example, if a smaller class size has a greater impact than a higher teacher salary, these governing bodies can allocate funds to hiring more teachers instead of paying teachers more. Since the revenue to pay for these amenities come from taxes, the tax-payers would want their child to get the most out of each dollar they are taxed. If the school is private, then the student's parents would prefer to see their extra tuition dollars being put to work. Since a production function with inputs of labor and capital are generally free to mobilize and are unfixed, the unfixed qualities of school and teacher components ought to be considered in order to maximize output.

IV. Empirical Model and Data

The database being used is from the National Educational Longitudinal Survey (NELS) of 1988 that was executed by the U.S. Department of Education. The survey consists of a sample of 24,599 students and 1,052 schools. Of the 1,052 schools 815 are public and 237 are private. However, due to missing data this study will have a sample of 23,188 students and 1,035 schools, of which 802 of the schools are public and 233 are private. The survey contains a total of 1,848 different variables that are categorized under student, parent, school, and teacher characteristics. All students were eighth graders at the time this survey was conducted (NELS). The survey is very

comprehensive and thorough in its data gathering as illustrated by the number of students and variables that are included in the survey. The information presented in the survey was gathered through personal one-on-one interviews, test scores, and both objective and subjective questionnaires. Because the survey was done by a nonpartisan government agency, biases and incorrect information are minimal.

As per the production function mentioned in the theoretical model section, a regression will be used to show the relationship between educational and individual inputs and standardized test scores that were designed by the U.S. Department of Education. There were four different standardized tests that were scored out of a possible 70 administered for the purposes of the NELS that included reading(R), math(M), science(S), and history/geography(H/G) subjects. Each subject will be its own dependent variable to determine the relationship the independent variables have on each subject area in addition to an average of the test scores. Additionally, a fifth dependent variable will be the average(A) of the scores.

The independent variables used in the regression model include the number of days in a school year for that particular school, the class size, the base salary teachers are paid, the number of years teachers have experience teaching, and the type of degree that teacher holds. In addition, three control variables are used including the individual's household income, whether the school is private or not, and what setting the school is in. For household income, there are two different variables indicating a middle income group and a high income group. Therefore, the middle income group and the high income group respectively are interpreted in reference to the low income group. Additionally, the school setting has two variables, one designating whether the setting is a city and the other one designating whether the setting is a suburb. The reference group is rural setting. The variable descriptions and dummy variable definitions for the independent variables can be found in Tables 1 and 2 respectively.

As previously mentioned, these control variables are put in place in order to focus on the impacts of school and teacher factors without significant outside factors biasing the results. School boards and local and state governments cannot influence individual-specific factors so the interest lies in how school boards and governments can best effectively run their schools through their own policymaking and protocol. From this, the following regression model is estimated:

$$TestScore(R,M,S,H/G,A) = \beta 1 + \beta 2\,(Mid\ Household\ Income) + \beta 3\,(High\ Household\ Income) + \beta 4\,(Private) + \beta 5\,(City) + \beta 6\,(Suburb) + \beta 7\,(Days) + \beta 8\,(Class\ Size) + \beta 9\,(Salary) + \beta 10\,(Experience) + \beta 11\,(Degree)$$

V. Results

As predicted, household income and whether the school was private or not had positive significant effects on all of the different test subjects. Students from high income backgrounds performed almost 8 points better on the tests than low income students and middle class students performed almost 5 points better than low income students. Private school students scored about 4.5 points higher than public school kids. Surprisingly, the setting of the school did not show any significance for either city or suburban communities. This is actually a good thing since local and state governments will not have to worry about the negative impact of building a school in a certain environment and how that might affect student achievement. As for the non-control variables, teacher salary was positively significant for the math scores and average scores. However, there was an insignificant yet negative relationship with reading and science scores. This shows that it is possible for a negative relationship to exist between teacher salaries and test scores. Since there is a correlation of -.535 between type of school and teacher salary, it'd be good to separate public and private schools and analyze them both separately. Since there is such a strong relationship between these two variables, these results might be a little skewed. Also, class size had a very significant negative effect against all five dependent variables. This means that the smaller the class, the better the students performed on the tests. This strongly shows that more teachers per school yield higher student academic success. On average, for every 0.148 students fewer in the classroom, the rest of the class scored 1 point better on the overall averages of the tests. That means that for every roughly 7 students fewer in a classroom, the students scored an average 10 points better on their exams which is profound given that the test scores are out of 70. A model was run with school-specific variables to test for the robustness of class size and it came up very significant thus showing that class size is a robust variable. Due to the large sample size, this appears to be an effective measure to increase student achievement in the classroom.

While some of the variables showed no significance for any of the different tests, there were a couple that had a coefficient sign that was opposite than expected. Number of school days and years of experience all had negative effects on test scores. The highest degree that the teacher earned had a positive effect on test scores but was not significant for any of the tests. The negative relationship between experience and test scores was explained by Carrell and West (2010) when they described that newer teachers tend to be more sensitive to quality assessments and therefore generally teach to the test. More experienced teachers might not feel it is as necessary to teach to the test as newer teachers are. Therefore, their students might not do as well on tests but that is not necessarily indicative that the students are not learning as much. Additionally, a correlation of -0.222 exists between private schools and the number of days in school. This can also account for the negative and relatively insignificant effect the number of school days in a year have on test scores.

VI. Conclusion

The hypothesis of this study was supported and more specifically class size had the greatest impact on test scores in both its significance and coefficient. Class size was significant for all subjects and their averages at the 0.01 level. A roughly 7 student class size reduction would yield a 10 point increase on the exams for the students in those smaller classes. This is very profound as a matter of policy for school districts and local governments. Because the per capita cost of schooling has gone up while the United States global educational competitiveness has fallen, it is important to consider the best way that tuition dollars can be allocated.

The number of teachers in each school is obviously a factor that has a considerable amount of possibility for increased student performance. It makes sense that a smaller class size can increase student performance because there is a closer relationship between the teacher and student. If the student is struggling with the material or has a general question, the teacher has more attention and time to focus on bettering the student's education. Therefore, class sizes should be strongly considered when the schools are planning their budgets.

Rivkin, Hanushek, and Kain (2005) found that smaller class sizes did have a significant effect yet it was only found in fourth and fifth graders in Texas public schools. The database used in this survey included private and public schools as well as schools from every state so there was a very comprehensive and inclusive sample in the database. Perhaps Texas public schools had certain policies that were unique and other states didn't have that differentiated my results from Rivkin, Hanushek, and Kain's results.

Surprising conclusions came from number of days in a school year, teacher experience, and even teacher salary. The number of school days was both correlated with the type of school that was being considered whether it was private or public. Private schools generally had shorter school years than public schools, explaining the negative relationship between days of school and test scores. Secondly, teacher experience had a negative relationship with test scores. As mentioned previously, Carrell and West (2010) found that inexperienced teachers tend to teach to the test more than experienced ones so it would make sense that the students of the inexperienced teachers did better on the tests. However, they also found that the students of experienced teachers did better in the more advanced classes thus demonstrating their ability to teach skills such as critical-thinking which seem to hold more merit long term. Lastly, while there was a significant positive relationship between teacher salary and math test scores, there was a negative relationship between salary and reading and science scores. Even though the negative relationships are insignificant, the negative sign shows that salary is very weak in determining test score results. Since there is a high correlation between teacher salary and the type of school, it would be good for future research to look into the structural differences between public and private schools on the issue of salary.

As for the remaining variables, it was not surprising that household income and type of school had highly significant effects. Higher income households have more resources to send their kids to school as well as well as a higher comfort level. Surprisingly, the location of the school did not matter much whether it was in a rural, suburban, or urban setting. Lastly, the teacher's degree had very low significance and had a negligible effect on student test scores. As previously mentioned, a smarter teacher does not necessarily mean a better teacher. This is useful information because since teachers that are more educated generally demand a higher salary, it would not be in the school's best interest to employ these sorts of teachers since the extra pay does not improve the students' educational experience.

A shortcoming of this study is the fact that this data was collected about 22 years ago and a lot has changed in the educational system. A prominent change was the No Child Left Behind Act signed in 2001 by President George W. Bush which was a program designed to set standards that schools had to meet. If they did not meet them said standards their federal funding would be cut. Most of these standards were based on student educational performance so schools started allocating resources away from elective curriculums and towards test-taking skills. Therefore, it is important to consider new federal and state policies like NCLB to better assess significant variables in today's educational system. Also, a newer National Educational Longitudinal Survey would be helpful in determining educational matters in these rapidly changing times. To compare with another famous longitudinal survey, the National Longitudinal Survey of Youth had its first survey in 1979 and started a new one recently in 1997. That was a difference of 18 years so it is about time for the U.S. Department of Education to spearhead another NELS to better examine what parts of our educational system needs improvement in.

Future research can be conducted on the difference between public schools and private schools. Since teacher salaries and days in a school year were correlated with the type of school, it would be good for future researchers to separate the two types of schools and analyze these sort of variables would have on test scores. Perhaps teacher salary and days in a school year might have a more significant positive relationship if the two types of schools are analyzed separately. Still, the main finding that class size was very significant is important for future educational policy-making for the betterment of our country's global competitiveness in educational achievement.

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Table 1: Variable Definitions and Descriptive Statistics (*: denotes control variable)

Variable	Definition	Exp. Sign	Mean	St. Dev.
Dependent				
Reading Score	Score out of 70		50.3119	10.06974
Math Score	Score out of 70		50.4072	10.18288
Science Score	Score out of 70		50.2507	10.11884
Hist/Geo Score	Score out of 70		50.3410	10.07191
Average Score	Average of all test scores		50.3633	8.93820
Independent				
Middle Household Income*	Annual household income between $25K and $75K	+	1.4504	0.49754
High Household Income*	Annual household income greater than $75K	+	1.0865	0.28112
Private*	Is school private or not?	+	1.1954	0.39652
City*	School is located in urban setting	?	1.3063	0.46096
Suburb*	School is located in suburban setting	?	1.4147	0.49268
Days	Days in school year	+	3.5425	1.08703
Size	Number of students in class	-	17.8720	4.87844
Salary	Base salary for teacher	?	4.2413	1.44344
Experience	Years of experience	+	5.0348	2.55939
Degree	Highest degree attained	+	2.5071	0.65323

Table 2: Dummy Variable Definitions

	Mid/High? HHI	City?/ Suburb?	Private	Degree	Experience (years)	Days	Salary (thousands)
1	No	No	No	Assoc. Degree	1-3	130-174	<12
2	Yes	Yes	Yes	B.A.	4-6	175	12.001-14
3				Master's Degree	7-9	176-179	14.001-16
4				Ed. Specialist	10-12	180	16.001-18
5				PhD	13-15	>181	18.001-20
6					16-18		20.001-22
7					19-21		>22
8					22-24		
9					>25		

Table 3: Regressions Predicting Composite Scores (Absolute t-stats in parentheses)

Variables	Reading	Math	Science	Hist./Geo.	Average
Constant	32.327	28.876	34.912	32.069	32.045
	(42.892)**	(38.405)**	(45.889)**	(42.312)**	(48.624)**
Mid HHI	4.725	5.154	4.818	4.778	4.896
	(35.007)**	(38.291)**	(35.363)**	(35.300)**	(41.305)**
High HHI	7.226	9.202	7.719	7.396	7.866
	(28.512)**	(36.403)**	(30.161)**	(29.095)**	(35.613)**
Private	4.684	4.753	3.702	4.802	4.492
	(22.509)**	(22.925)**	(17.363)**	(22.929)**	(24.669)**
City	0.274	0.066	-0.065	0.133	0.103
	(1.623)	(0.392)	(0.380)	(0.786)	(0.704)
Suburb	-0.003	-0.049	-0.289	-0.288	-0.169
	(0.021)	(0.311)	(1.805)	(1.812)	(1.225)
Days	-0.033	-0.090	-0.126	-0.139	-0.096
	(0.549)	(1.480)	(2.057)*	(2.274)*	(1.817)
Size	-0.133	-0.158	-0.193	-0.117	-0.148
	(9.660)**	(11.528)**	(13.884)**	(8.497)**	(12.381)**
Salary	-0.071	0.339	-0.004	0.078	0.101
	(1.321)	(6.333)**	(0.077)	(1.450)	(2.152)*
Exp	-0.030	-0.023	-0.056	-0.043	-0.040
	(1.121)	(0.871)	(0.077)	(1.610)	(1.731)
Degree	0.092	0.059	0.073	0.091	0.071
	(0.875)	(0.567)	(0.691)	(0.862)	(0.768)
R^2	.13	.15	.12	.13	.16

Sample Sizes: 23,188

* Indicates significance at α=.05
** Indicates significance at α=.01

Table 4: Independent Variable Bivariate Correlation Coefficients

	Variables	MidHHI	HighHHI	Private	City	Suburb	Days	Size	Salary	Exp	Degree
MidHHI	Correlation	1	-.279**	.001	.005	.001	.032**	.021**	-.059**	-.004	.017*
	Sig. (2-tailed)		.000	.936	.431	.929	.000	.002	.000	.595	.011
	N	23188	23188	23188	23188	23188	23062	23188	22723	23019	22983
HighHHI	Correlation	-.279**	1	.241**	-.009	.012	-.114**	-.157**	-.007	-.021**	-.023**
	Sig. (2-tailed)	.000		.000	.181	.078	.000	.000	.260	.001	.000
	N	23188	23188	23188	23188	23188	23062	23188	22723	23019	22983
Private	Correlation	.001	.241**	1	-.006	.054**	-.222**	.144**	-.535**	-.014*	-.024**
	Sig. (2-tailed)	.936	.000		.355	.000	.000	.000	.000	.035	.000
	N	23188	23188	23188	23188	23188	23062	23188	22723	23019	22983
City	Correlation	.005	-.009	-.006	1	-.559**	-.018**	.043**	-.033**	-.059**	.015*
	Sig. (2-tailed)	.431	.181	.355		.000	.005	.000	.000	.000	.026
	N	23188	23188	23188	23188	23188	23062	23188	22723	23019	22983
Suburb	Correlation	.001	.012	.054**	-.559**	1	.028**	-.004	.041**	-.007	.037**
	Sig. (2-tailed)	.929	.078	.000	.000		.000	.592	.000	.309	.000
	N	23188	23188	23188	23188	23188	23062	23188	22723	23019	22983
Days	Correlation	.032**	-.114**	-.222**	-.018**	.028**	1	.059**	.178**	.074**	.022**
	Sig. (2-tailed)	.000	.000	.000	.005	.000		.000	.000	.000	.001
	N	23062	23062	23062	23062	23062	23062	23062	22621	22893	22857
Size	Correlation	.021**	-.157**	.144**	.043**	-.004	.059**	1	-.100**	-.027**	-.029**
	Sig. (2-tailed)	.002	.000	.000	.000	.592	.000		.000	.000	.000
	N	23188	23188	23188	23188	23188	23062	23188	22723	23019	22983
Salary	Correlation	-.059**	-.007	-.535**	-.033**	.041**	.178**	-.100**	1	-.014*	.009
	Sig. (2-tailed)	.000	.260	.000	.000	.000	.000	.000		.042	.158
	N	22723	22723	22723	22723	22723	22621	22723	22723	22554	22518
Exp	Correlation	-.004	-.021**	-.014*	-.059**	-.007	.074**	-.027**	-.014*	1	.338**
	Sig. (2-tailed)	.595	.001	.035	.000	.309	.000	.000	.042		.000
	N	23019	23019	23019	23019	23019	22893	23019	22554	23019	22952
Degree	Correlation	.017*	-.023**	-.024**	.015*	.037**	.022**	-.029**	.009	.338**	1
	Sig. (2-tailed)	.011	.000	.000	.026	.000	.001	.000	.158	.000	
	N	22983	22983	22983	22983	22983	22857	22983	22518	22952	22983