Influence of mathematics and reading scores
on type of college attended

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ABSTRACT

It is well known that more selective colleges and universities require higher mathematics and reading scores for admittance than less selective colleges and universities.   Less is known about how mathematics and reading scores relate to the type of college or university attended. The present paper examines this question by considering the influence of mathematics and reading scores on the type of college attended using data from the Education Longitudinal Study of 2002. The analysis uses test scores taken when students were sophomores in high school to predict type of college attended as measured by the Carnegie Basic Classification.   The results show a clear ordering of universities with students with higher mathematics and reading scores more likely to attend research universities/very high research/private than any other category.   There were three additional types that higher scoring students preferred to attend including two more types of private institutions and one type of public institution.   These top four categories captured 37 percent of respondents.   The next four most preferred types of institutions, capturing 25 percent of respondents, included three types of private institutions and one type of public institution.   The eight types of institutions, capturing 38 percent of respondents, that were least preferred by higher scoring students included six types of public institutions and two types of private institutions.

KEYWORDS: College selectivity; Carnegie Basic Classification; Achievement scores

1. INTRODUCTION

It is well known that some colleges and universities require higher mathematics and reading scores for admittance than other colleges and universities.   Elite private universities such as Harvard, Duke, Chicago, and Stanford require very high scores and other schools such as public research universities also require high scores although scores not as high as elite private universities.   On the other end, regional public universities are not very demanding in regard to test scores.

Research has shown a strong relationship between the test scores of students and the level of selectivity of the institutions that students attend (Alon and Tienda 2007; An 2010; Davies and Guppy 1997; Hearn 1991; Karen 2002; Kim and Schneider 2005; Turley, Santos and Ceja 2006; Stearns and Moller 2009).   Those students with higher test scores are more likely to attend more selective institutions than those with lower test scores.   The level of selectivity of an institution is typically measured by the mean test scores of entering freshman or a combination of freshman test scores and acceptance rates.   Lacking in previous research is work that examines the relationship between test scores and type of institution attended.   The purpose of the present paper is to address this gap in research on the relationship between test scores and college selectivity by considering how mathematics and reading scores of students relate to the type of college/university that students enter.   In order to sort college and universities by type, the analysis in this paper uses the Carnegie Basic Classification (Carnegie Foundation for the Advancement of Teaching 2010).

Using test scores as predictors, the analysis finds that the Carnegie Basic Classification categories fall into a rough hierarchy with four categories at the top, four in the upper middle, four in the lower middle, and four at the bottom.   The following is a list of Carnegie Basic Classification categories that is ordered based on the findings from the present research with the most selective categories based on mathematics and reading scores listed first:

Highest:	Research universities	very high research activity	private
	Research universities	high research activity	private
	Research universities	very high research activity	public
	Baccalaureate college	Arts and Sciences	private
Upper Middle:	Doctoral/research universities		private
	Master's colleges and universities	larger	private
	Research universities	high research activity	public
	Master's colleges and universities	medium	private
Lower Middle:	Doctoral/research universities		public
	Baccalaureate college	Arts and Sciences	public
	Master's colleges and universities	larger	public
	Master's colleges and universities	smaller	private
Lowest:	Baccalaureate college	diverse	private
	Master's colleges and universities	medium	public
	Baccalaureate college	diverse	public
	Master's colleges and universities	smaller	public

1.1 Research on College Selectivity

Previous research has found a strong relationship between student characteristics and the selectivity of the college that students attend. One of the strongest findings is that students with higher test scores are more likely to attend selective institutions (Alon and Tienda 2007; An 2010; Davies and Guppy 1997; Hearn 1991; Karen 2002; Kim and Schneider 2005; Turley, Santos and Ceja 2006; Stearns and Moller 2009). In addition, those students with higher grade point averages, those with higher class ranks, and those on college preparatory tracks are also more likely to attend selective institutions (Alon and Tienda 2007; An 2010; Davies and Guppy 1997; Hearn 1991; Karen 2002; Stearns and Moller 2009). Family background also plays a role with those students with more educated parents and in families with higher incomes more likely to attend selective institutions (An 2010; Davies and Guppy 1997; Hearn 1991; Karen 2002; Stearns and Moller 2009).

The results for race and ethnicity based on relatively recent data from the National Educational Longitudinal Study and the Education Longitudinal Study are mixed with some studies not finding significant differences between African Americans, Hispanics, and Asians versus non-Hispanic whites while other studies finding positive differences for African Americans, Hispanics, or Asians (Alon and Tienda 2007; An 2010; Kim and Schneider 2005; Turley, Santos and Ceja 2006; Stearns and Moller 2009). Only Karen (2002) found a negative effect showing that African-African Americans had lower chances of attending selective institutions.

Selectivity is typically measured in research studies by using the mean SAT scores of entering freshman and/or by the acceptance rates for applicants. Mean SAT score is the dependent variable used in Davies and Guppy (1997), Hearn (1991), Karen (2002), and Stearns and Moller (2009). Barron's magazine has created a categorical variable based on SAT scores, class ranks, grade point averages, and acceptance rates that ranks institutions into selectivity categories. This selectivity variable was used as a dependent variable by Alon and Tienda (2007), An (2010), Davies and Guppy (1997), Eide, Goldhaber, and Showalter (2004), and Kim and Schneider (2005). One study used only admission rates as the measure of selectivity (Turley, Santos and Ceja 2006).

While mean SAT scores and acceptance rates capture important aspects of selectivity, other dimensions of selectivity have not been considered in previous research. For example, it may be that students view private schools as being more selective than public institutions, or research institutions as being more selective than non-research institutions, or liberal arts colleges as being more selective than universities. While previous research has shown that students with higher test scores are more likely to attend selective institutions as measured by mean SAT scores (Alon and Tienda 2007; An 2010; Davies and Guppy 1997; Hearn 1991; Karen 2002; Kim and Schneider 2005; Turley, Santos and Ceja 2006; Stearns and Moller 2009), the relationship between the test scores of students and the type of college attended as measured by public/private, research/not research, or liberal arts/not liberal arts has not been examined. The purpose of the present research is to examine the relationship between the test scores of students and type of college attended by using the Carnegie Basic Classification to categorize colleges and universities by type.

2. HYPOTHESES

While students may select a college or university based on their knowledge of the mean SAT scores of entering freshman and the acceptance rates of applicants, students may also choose institutions based on other more readily apparent characteristics such as whether or not the institution is a private institution, a research university, or a baccalaureate Arts and Sciences college. This suggests the following hypotheses:

Hypothesis 1: Students with higher test scores will be more likely to attend private institutions than public institutions.

Hypothesis 2: Students with higher test scores will be more likely to attend research institutions than other types of institutions.

Hypothesis 3: Students with higher test scores will be more likely to attend baccalaureate Arts and Sciences institutions than other types of institutions.

An additional issue is whether or not institutions fall on a continuum from high to low in regard to the test scores of the students who enroll as freshman. An alternative to a complete continuum would be a partial continuum. In this case, for some categories of institutions students with higher test scores will be more likely to enroll in one category than in another category. However for other categories of institutions such as those with modest or no requirements for test scores, students with higher test scores will be no more likely to enroll in one type than in another type. This leads to two competing hypotheses:

Hypothesis 4a: All categories of institutions will fall on a continuum such that students with higher test scores will be more likely to enroll in the higher ranked category than in the lower ranked category. It is expected that private universities, universities which are research intensive, and universities with liberal arts orientations will be at the higher end of the distribution.

Hypothesis 4b: Some categories of institutions will fall on a continuum such that students with higher test scores will be more likely to enroll in a higher ranked category than in a lower ranked category. On the other hand, other categories of institutions will be undifferentiated in that students with higher test scores will be no more likely to enroll in one category than in another.

3. DATA AND METHODS

The Carnegie Commission on Higher Education developed in 1970 a classification system for college and universities to facilitate research and policy analysis in higher education (Carnegie Foundation for the Advancement of Teaching 2010). The Carnegie Commission provided in 2005 a revised classification. This revised Carnegie Basic Classification is used in the present analysis. Research on higher education has used the Carnegie Basic Classification extensively to capture differences in institutional mission (McCormick and Zhao 2005).

The analysis in this paper uses nationally representative data from the Education

Longitudinal Study of 2002 (ELS). The survey data collection was supervised by the National Center for Education Statistics. The survey began in 2002 with 12,144 respondents with follow-ups in 2004 and 2006. The present study examines respondents who participated in all three waves and who had entered a four-year college or university by 2006. The analysis is limited to those respondents who entered a four-year college or university that was in one of the eight Carnegie Basic Classification categories considered in the analysis

Mathematics and reading scores were measured in 2002 when most of the respondents were sophomores in high school. Sophomore scores are used in the analysis rather than senior scores in order to minimize loss of sample due to dropping out of high school. An alternative to ELS measured mathematics and reading scores would be SAT scores. However, only total SAT scores for respondents are available in the data and separate SAT scores for mathematics and reading are not available. In addition, SAT scores are missing for a large portion of the sample while there is very little missing data for ELS measured test scores. In analysis not shown, ELS sophomore achievement scores correlated highly with SAT scores for those in the sample with SAT scores. Thus, ELS sophomore achievement scores serve as a strong proxy for SAT test scores.

The name of the first four-year college or university that the respondent entered was captured by a question in 2006. This date is about two years after when most of the respondents had graduated high school. One methodological issue is that test scores and family socioeconomic status are highly correlated: the higher family socioeconomic status, the higher test scores. In order to hold constant the confounding influence of family socioeconomic status when considering the effects of test scores on college choice, the analysis in this paper controls for parental education (the education attainment of the highest educated parent) and family income. Information for both of these variables was collected in 2002, the base year of the survey.

ELS assigned each respondent who attended a four year college or university a code for the institution that the respondent attended. This code was used to link each respondent's record to the appropriate Carnegie Basic Classification category. The Carnegie Basic Classification divides colleges and universities into thirty-three categories. The present analysis uses the eight categories that capture exclusively four-year institutions. These eight categories include only four-year colleges and universities and not institutions that offer both four-year and two-year degrees or only two-year degrees. The Carnegie Basic Classification does not differentiate institutions by whether they are private or public. Thus, the Carnegie Basic Classification was modified in the analysis using a variable from the ELS which measured the institutional control of the first institution attend by the respondent. As a result, the analysis in this paper considers a typology of institutions that has sixteen categories. The eight Carnegie Basic Classification categories that are being used in the analysis are subdivided into private and public.

The analysis in the present paper employs a series of multinomial regressions to examine how well mathematics and reading scores predict attending one modified Carnegie Basic Classification category compared to another. With sixteen categories to compare, 120 logistic regressions were estimated. Each logistic regression includes respondents who attended either one of two categories of institutions. The dependent variable in the regression is then whether the respondent attended the first category of institution versus attended the second category. The test scores of the respondent are then used to predict having attended one category of institution versus the other category.

Table 1 shows the sixteen modified Carnegie Basic Classification categories used in the present analysis. For each category the table also provides example institutions. Detailed

listings for each category can be found at the Carnegie Foundation for the Advancement of Teaching web site. Table 2 lists the sixteen categories of the modified Carnegie Basic Classification along with the N for each category, the percentage of respondents in each category, and the mean mathematics score for respondents in each category. The total number of respondents in the analysis was 5,877. This is the number of respondents in the ELS who attended a four-year institution within two years of the normal age for high school graduation.

In Table 3, the sixteen modified Carnegie Basic Classification categories are ordered by the mean mathematics score for the respondents who attended one of the institutions in the category. In this table, the sixteen categories have been divided into four groups based on mean mathematics scores. The regression analysis later in this paper will show that these four groups are distinct from one another. Finally, Table 4 shows the abbreviations used in the tables that describe the regression analysis.

4. RESULTS

Table 5 begins the heart of the analysis and shows the results of multinomial regressions. The independent variables in each regression are mathematics and reading scores with parental education and family income included but with results not shown. The numerator of the dependent variable is listed across the columns and the denominator is listed down the rows. For example, the regression coefficient for mathematics scores is .09 and the coefficient for reading scores is .01 for log-odds of attending research universities/very high research/private (RUVHPR) versus research universities/high research/private (RUHPR). Table 5 compares research universities/very high research/private (RUVHPR), research universities/high research/private (RUHPR), research universities/very high research/public (RUVHPU), and baccalaureate college/Arts and Sciences/private to one another and to the other twelve types of institutions.

Students with higher mathematics scores are more likely to attend research universities/very high research/private (RUVHPR) than research universities/high research/private (RUHPR) or baccalaureate college/Arts and Sciences/private research (BAASPR). In addition, students with higher mathematics scores or with higher reading scores are more likely to choose research universities/very high research/private (RUVHPR) than universities/very high research/public (RUVHPU). Table 5 also shows that students with higher mathematics scores or with higher reading scores are more likely to pick research universities/very high research/private (RUVHPR) than any of the other twelve types of college and universities. Not surprisingly, students with higher mathematics scores or with higher reading scores are more likely to attend research universities/very high research/private (RUVHPR), the type that includes the elite private research universities in the United States, than any other type of college or university.

The results are mixed in regard to differences among research universities/high research/private (RUHPR), research universities/very high research/public (RUVHPU), and baccalaureate college/Arts and Sciences/private (BAASPR). While students with higher mathematics scores are more likely to attend research universities/high research/private (RUHPR) than research universities/very high research/public (RUVHPU), students with higher mathematics scores or with higher reading scores are no more likely to choose research universities/high research/private (RUHPR) than baccalaureate college/Arts and Sciences/private (BAASPR). In contrast, while students with higher mathematics scores are more likely to attend research universities/very high research/public (RUVHPU) than baccalaureate college/Arts and

Sciences/private (BAASPR), students with higher reading scores are more likely to attend baccalaureate college/Arts and Sciences/private (BAASPR) than research universities/very high research/public (RUVHPU). Thus, there in no clear hierarchy among these three types of colleges and universities. On the other hand, students with higher mathematics scores or with higher reading scores are more likely to attend research universities/high research/private (RUHPR), research universities/very high research/public (RUVHPU), and baccalaureate college/Arts and Sciences/private (BAASPR) than any of the twelve types of college and universities listed below these three types.

In the next step of the analysis, Table 6 compares doctoral/research universities/private (DRUPR), master's colleges and universities/larger/private (MSLPR), research universities/high research activity/public (RUHPU), and master's colleges and universities/medium/private (MSMPR) to one another and to the other eight types of college and universities listed below these four types. Neither higher mathematics scores nor higher reading scores make students more likely to attend one of these four types than another of the four types.

Comparing these four types to the next four types listed below them, students with higher mathematics scores are more likely to attend doctoral/research universities/private (DRUPR) than any of the next four types of college and universities. In addition, students with higher mathematics scores are more likely to choose master's colleges and universities/larger/private (MSLPR), research universities/high research activity/public (RUHPU), and master's colleges and universities/medium/private (MSMPR) over master's colleges and universities/smaller/private (MSSPR). Otherwise, there is no consistent pattern indicating that students with higher mathematics scores or higher reading scores would attend master's colleges and universities/larger/private (MSLPR), research universities/high research activity/public (RUHPU), or master's colleges and universities/medium/private (MSMPR) rather than doctoral/research universities/public (DRUPU), baccalaureate college/Arts and Sciences/public (BAASPU), or master's colleges and universities/larger/public (MSLPU).

On the other hand in comparing doctoral/research universities/private (DRUPR), master's colleges and universities/larger/private (MSLPR), research universities/high research activity/public (RUHPU), and master's colleges and universities/medium/private (MSMPR) to the bottom four types of colleges and universities, in almost every instance students with either higher mathematics scores or higher reading scores are more likely to attend doctoral/research universities/private (DRUPR), master's colleges and universities/larger/private (MSLPR), research universities/high research activity/public (RUHPU), and master's colleges and universities/medium/private (MSMPR) than any of the bottom four types.

The next four types of colleges and universities are considered in Table 7. Test scores of entering students do not distinguish doctoral/research universities/public (DRUPU), baccalaureate college/Arts and Sciences/public (BAASPU), master's colleges and universities/larger/public (MSLPU), or master's colleges and universities/smaller/private (MSSPR) from one another. In addition, test scores do not consistently distinguish doctoral/research universities/public (DRUPU), baccalaureate college/Arts and Sciences/public (BAASPU), master's colleges and universities/larger/public (MSLPU), or master's colleges and universities/smaller/private (MSSPR) from baccalaureate college/diverse/private (BADIPR), master's colleges and universities/medium/public (MSMPU), baccalaureate college/diverse/public (BADIPU), and master's colleges and universities/smaller/public (MSSPU).

Table 8 shows that test scores do not consistently distinguish baccalaureate college/diverse/private (BADIPR), master's colleges and universities/medium/public (MSMPU),

baccalaureate college/diverse/public (BADIPU), and master's colleges and universities/smaller/public (MSSPU) from one another. Thus when the bottom eight types of colleges and universities are considered, students with high mathematics scores or higher reading scores do not consistently attend one type of college and university over another type.

5. CONCLUSIONS

The results affirm that student who score higher on achievement tests have definite preferences for the type of college or university that they attend. The most preferred type is research universities/very high research/private. This category includes elite private research universities such as Emory, Harvard, Northwestern, and Rice. The next three categories most preferred by higher scoring students are research universities/very high research/private (for example Baylor, Brigham Young, Northeastern, and George Washington), research universities/very high research/public (for example Florida, Kansas State, Michigan, and Texas), and baccalaureate college/Arts and Sciences/private (for example Amherst, Carleton, Davidson, and Oberlin). Thus, elite private research universities and the most selective private liberal arts college are at the top of the list for being preferred by higher scoring students. That the top public research universities are also at the top of the list indicates that higher scoring students have a more affordable public university option when searching for an elite university to attend.

The next four types of include three types of private institutions and one type of public institution. These four types stand out because 1) they are all less preferred by higher scoring students than the top four types, 2) higher scoring students do not prefer one of these types more than another, and 3) these four types of college and universities are all more preferred by higher scoring students more than the bottom eight types of college and universities. This second group of four types of college and universities includes doctoral/research universities/private (for example American, Hofstra, Pepperdine, and Southern Methodist), master's colleges and universities/larger/private (for example Bradley, Gonzaga, Villanova, and Xavier), research universities/high research activity/public (for example Auburn, Ohio, Oklahoma State, and San Diego State), and master's colleges and universities/medium/private (Butler, Creighton, Manhattan, and Washburn).

The bottom eight types of college and universities with respect to the preferences of students who score higher on mathematics and reading achievement tests are not clearly differentiated one for the other. These types include six types of public institutions and two types of private institutions. While the bottom eight types are mostly public institutions, students who do not have higher test scores also choose to attend master's colleges and universities/smaller/private (for example Evansville, Heidelberg, Upper Iowa, and Valpariso) and baccalaureate college/diverse/private (for example Carthage, Colby-Sawyer, Manchester, and Ohio Northern).

Overall, students with higher mathematics and reading scores prefer to attend private universities although public research universities also attract attention. Six of the top eight types of institutions are private. In addition, three of the four most preferred types of college and universities are research universities with the exception being selective private liberal arts colleges. While the first four types of institutions are clearly differentiated from the other twelve types and the next four types institutions stand out both from those above and those below, the bottom eight types of institutions show no clear pattern of differentiation. These bottom eight types of colleges and universities include 38 percent of respondents indicating that mathematics and

reading scores do not predict type of college attended for a large part of those attending higher education institutions. It appears that test scores matter most for college choice for those who have test scores on the higher end of the distribution.

One implication of the present study for future research is that measures of college selectivity can be enhanced by including information about type of college or university. While previous research has shown that students scoring higher in mathematics and reading choose colleges and universities that are more selective in terms of the test scores of entering freshman and admittance rates, the present research has shown that there are additional dimensions that deserve attention. Private institutions and research universities are also strongly preferred by higher scoring students. In addition, selective private baccalaureate arts and sciences colleges are strongly preferred by higher scoring students.

In addition to including information about private versus public, high research activity versus not high research activity, or private baccalaureate versus other types in the dependent variable, further research needs to explore what factors predict choice of type of college or university by entering students. In examining differences in choice among the most preferred types of college and universities, further research is needed to understand what factors would explain choosing private over public, high research activity over not high research activity, and private selective baccalaureate arts and sciences over other types. What roles do race/ethnicity, gender, and parental socioeconomic status play in the choice of type of college or university attended? The addition of more information in the dependent variable about the type of college or university attended would provide opportunities to expand knowledge about how social factors other than test scores affect college choice.

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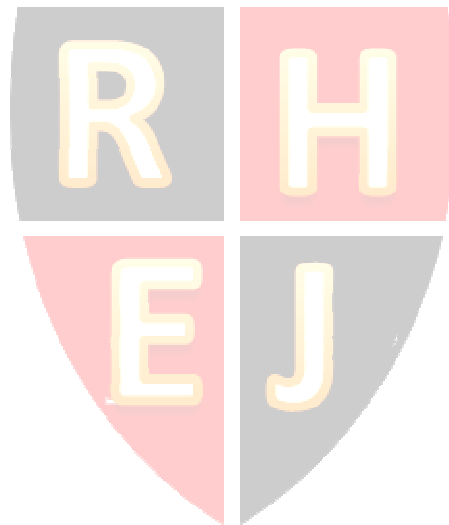
Table 1.

Examples of institutions by Carnegie Basic Classification

Modified Carnegie - Basic Classification

Research universities/very high research activity/private:
    Emory, Harvard, Northwestern, Notre Dame, Rice, Stanford, Washington U.
Research universities/very high research activity/public:
    Connecticut, Florida, Kansas St., Kentucky, Michigan, New Mexico, Texas, UCLA
Research universities/high research activity/private:
    Baylor, Boston College, Brigham Young, Fordham, Northeastern, George Washington
Research universities/high research activity/public:
    Auburn, Idaho, Kent St., Maine, Northern Arizona, Ohio U., Oklahoma St., San Diego St.
Doctoral/research universities/private:
    American, Hofstra, Oral Roberts, Pacific, Pepperdine, St. John's, Southern Methodist
Doctoral/research universities/public:
    Ball St., East Carolina, East Tennessee, Louisiana Tech, Northern Colorado, Portland St.
Master's colleges and universities/larger/private:
    Bradley, Drake, Fairfield, Gonzaga, Loyola Marymont, Santa Clara, Villanova, Xavier
Master's colleges and universities/larger/public:
    Appalachian St., CSU Fullerton, Central Wash., CUNY City College, Towson St.
Master's colleges and universities/medium/private:
    Afred, Butler, Creighton, North Central, Manhattan, Otterbein, Trinity, Washburn
Master's colleges and universities/medium/public:
    CSU-San Marcos, College of Charleston, Truman St., Weber St.,Wisconsin-Eau Claire
Master's colleges and universities/smaller/private:
    Elmhurst, Elon, Evansville, Heidelberg, Mount St. Mary's, Upper Iowa, Valpariso
Master's colleges and universities/smaller/public:
    Bemidji St., Evergreen St., Keene St., Lock Haven, Maryland-Eastern Shore
Baccalaureate college/Arts and Sciences/private:
    Allegheny, Amherst, Carleton, Davidson, DePauw, Harvey Mudd, Oberlon
Baccalaureate college/Arts and Sciences/public:
    Coastal Carolina, Fort Lewis, Minnesota-Morris, UNC-Asheville, Wisconsin-Parkside
Baccalaureate college/diverse/private:
    Carthage, Colby-Sawyer, Eureka, Loras, Manchester, Ohio Northern, Stillman
Baccalaureate college/diverse/public:
    Athens St., Kentucky St., Lake Superior St., Lewis-Clark, Missouri Southern

Table 2.

Sample size and mean mathematics scores for Carnegie Basic Classification (unsorted)

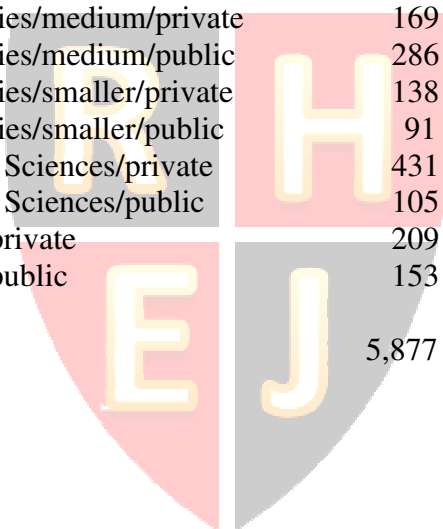| Carnegie - Basic Classification (example institutions)	N	%	Mean Math Score
Research universities/very high research activity/private	231	3.9	65
Research universities/very high research activity/public	1,334	22.7	59
Research universities/high research activity/private	172	2.9	61
Research universities/high research activity/public	786	13.4	56
Doctoral/research universities/private	159	2.7	58
Doctoral/research universities/public	225	3.8	54
Master's colleges and universities/larger/private	369	6.3	56
Master's colleges and universities/larger/public	1,019	17.3	54
Master's colleges and universities/medium/private	169	2.9	56
Master's colleges and universities/medium/public	286	4.9	52
Master's colleges and universities/smaller/private	138	2.3	54
Master's colleges and universities/smaller/public	91	1.6	50
Baccalaureate college/Arts and Sciences/private	431	7.3	59
Baccalaureate college/Arts and Sciences/public	105	1.8	54
Baccalaureate college/diverse/private	209	3.6	53
Baccalaureate college/diverse/public	153	2.6	51
N	5,877	100.0	

Table 3.

Sample size and mean mathematics scores for Carnegie Basic Classification (sorted)

Carnegie - Basic Classification (example institutions)	N	%	Mean Math Score
Research universities/very high research activity/private	231	3.9	65
Research universities/high research activity/private	172	2.9	61
Research universities/very high research activity/public	1,334	22.7	59
Baccalaureate college/Arts and Sciences/private	431	7.3	59
Doctoral/research universities/private	159	2.7	58
Master's colleges and universities/larger/private	369	6.3	56
Research universities/high research activity/public	786	13.4	56
Master's colleges and universities/medium/private	169	2.9	56
Doctoral/research universities/public	225	3.8	54
Baccalaureate college/Arts and Sciences/public	105	1.8	54
Master's colleges and universities/larger/public	1,019	17.3	54
Master's colleges and universities/smaller/private	138	2.3	54
Baccalaureate college/diverse/private	209	3.6	53
Master's colleges and universities/medium/public	286	4.9	52
Baccalaureate college/diverse/public	153	2.6	51
Master's colleges and universities/smaller/public	91	1.6	50
N	5,877	100.0	

Influence of mathematics and reading

Table 4

Abbreviations for Carnegie Basic Classification categories

Carnegie - Basic Classification	Abbreviation
Research universities/very high research activity/private	RUVHPR
Research universities/very high research activity/public	RUVHPU
Research universities/high research activity/private	RUHPR
Research universities/high research activity/public	RUHPU
Doctoral/research universities/private	DRUPR
Doctoral/research universities/public	DRUPU
Master's colleges and universities/larger/private	MSLPR
Master's colleges and universities/larger/public	MSLPU
Master's colleges and universities/medium/private	MSMPR
Master's colleges and universities/medium/public	MSMPU
Master's colleges and universities/smaller/private	MSSPR
Master's colleges and universities/smaller/public	MSSPU
Baccalaureate College/Arts and Sciences/private	BAASPR
Baccalaureate College/Arts and Sciences/public	BAASPU
Baccalaureate College/diverse/private	BADIPR
Baccalaureate College/diverse/public	BADIPU

Table 5

Multinomial regression for effects of mathematics and reading scores on chances of attending Carnegie Basic Classification type 1 Versus Carnegie Basic Classification type 2 controlling for parental education and family income

TYPE 1

TYPE 2		RUVHPR	RUHPR	RUVHPU	BAASPR
RUHPR	M:	.09*	-	-	-
	R:	.01	-	-	-
RUVHPU	M:	.07*	-.02	-	-
	R:	.06*	.05*	-	-
BAASPR	M:	.10*	.02	.03*	-
	R:	.02	.02	-.04*	-
DRUPR	M:	.12*	.02	.02	-.02
	R:	.07*	.06*	-.01	.04*
MSLPR	M:	.16*	.06*	.05*	.02
	R:	.05*	.05*	-.01	.03
RUHPU	M:	.13*	.05*	.04*	.01
	R:	.05*	.05*	-.01	.04*
MSMPR	M:	.18*	.07*	.05*	.01
	R:	.06*	.07*	.01	.06*
DRUPU	M:	.16*	.07*	.08*	.03
	R:	.08*	.10*	-.01	.05*
BAASPU	M:	.13*	.06*	.06*	.02
	R:	.10*	.11*	.01	.06*
MSLPU	M:	.16*	.06*	.06*	.03
	R:	.07*	.09*	.01	.06*
MSSPR	M:	.18* .	.10*	.08*	.04*
	R:	.03	.04	-.02	.03
BADIPR	M:	.13*	.07*	.08*	.04*
	R:	.05*	.04	-.02	.02
MSMPU	M:	.17*	.07*	.07*	.02
	R:	.08*	.09*	.02	.08*
BADIPU	M:	.20*	.09*	.07*	.02*
	R:	.07*	.09*	.03	.09*
MSSPU	M:	.24*	.14*	.10*	.05
	R:	.07*	.10*	.01	.07*

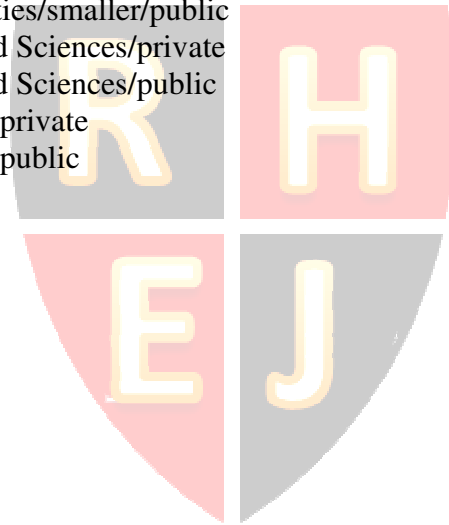Influence of mathematics and reading

Table 6

Multinomial regression for effects of mathematics and reading scores on chances of attending Carnegie Basic Classification type 1 Versus Carnegie Basic Classification type 2 controlling for parental education and family income

TYPE 1

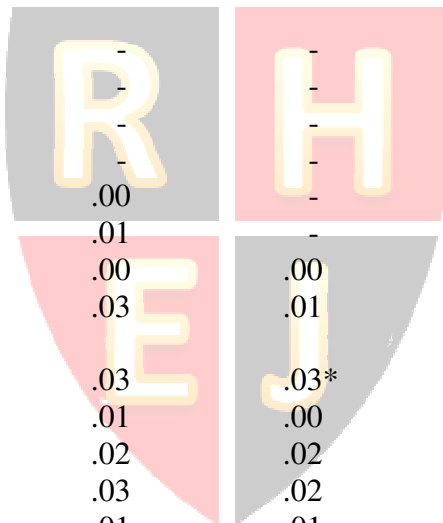| TYPE 2		DRUPR	MSLPR	RUHPU	MSMPR
RUHPR	M:	-	-	-	-
	R:	-	-	-	-
RUVHPU	M:	-	-	-	-
	R:	-	-	-	-
BAASPR	M:	-	-	-	-
	R:	-	-	-	-
DRUPR	M:	-	-	-	-
	R:	-	-	-	-
MSLPR	M:	.04	-	-	-
	R:	.00	-	-	-
RUHPU	M:	.03	.00	-	-
	R:	.00	.01	-	-
MSMPR	M:	.05	.00	.00	-
	R:	.01	.03	.01	-
DRUPU	M:	.08*	.03	.03*	.03
	R:	.01	.01	.00	-.01
BAASPU	M:	.06*	.02	.02	.03
	R:	.04	.03	.02	.02
MSLPU	M:	.05*	.01	.01	.01
	R:	.02	.03*	.01	.01
MSSPR	M:	.10*	.04*	.04*	.06*
	R:	-.02	.01	-.01	-.03
BADIPR	M:	.07*	.04*	.04*	.05*
	R:	-.01	-.01	-.01	-.03
MSMPU	M:	.06*	.03	.03	.04
	R:	.04	.04*	.03*	.01
BADIPU	M:	.08*	.03	.03	.05*
	R:	.05	.05*	.04*	.03
MSSPU	M:	.11*	.07*	.07*	.08*
	R:	.03	.02	.01	.01

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Table 7

Multinomial regression for effects of mathematics and reading scores on chances of attending Carnegie Basic Classification type 1 Versus Carnegie Basic Classification type 2 controlling for parental education and family income

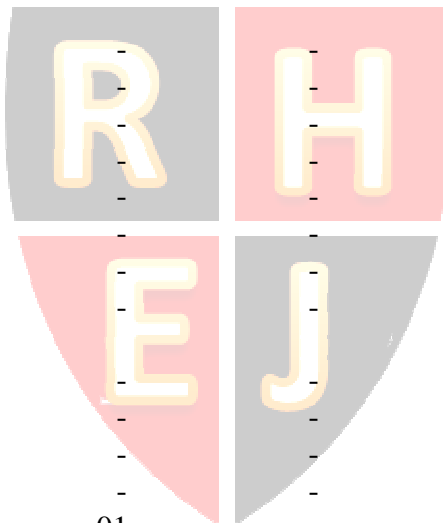|		TYPE 1			
TYPE 2		DRUPU	BAASPU	MSLPU	MSSPR
RUHPR	M:	-	-	-	-
	R:	-	-	-	-
RUVHPU	M:	-	-	-	-
	R:	-	-	-	-
BAASPR	M:	-	-	-	-
	R:	-	-	-	-
DRUPR	M:	-	-	-	-
	R:	-	-	-	-
MSLPR	M:	-	-	-	-
	R:	-	-	-	-
RUHPU	M:	-	-	-	-
	R:	-	-	-	-
MSMPR	M:	-	-	-	-
	R:	-	-	-	-
DRUPU	M:	-	-	-	-
	R:	-	-	-	-
BAASPU	M:	.00	-	-	-
	R:	.02	-	-	-
MSLPU	M:	-.02	-.01	-	-
	R:	.02	.00	-	-
MSSPR	M:	.01	.01	.03	-
	R:	-.02	-.03	-.03	-
BADIPR	M:	.02	.01	.04*	.01
	R:	-.01	-.03	-.03*	-.01
MSMPU	M:	.00	.00	.02	-.02
	R:	.03	.01	.01	.05*
BADIPU	M:	-.01	-.01	.02	-.02
	R:	.06*	.03	.02	.06*
MSSPU	M:	.03	.04	.07*	.03
	R:	.03	.00	-.01	.04

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Table 8

Multinomial regression for effects of mathematics and reading scores on chances of attending Carnegie Basic Classification type 1 Versus Carnegie Basic Classification type 2 controlling for parental education and family income

		TYPE 1			
TYPE 2		BADIPR	MSMPU	BADIPU	MSSPU
RUHPR	M:	-	-	-	-
	R:	-	-	-	-
RUVHPU	M:	-	-	-	-
	R:	-	-	-	-
BAASPR	M:	-	-	-	-
	R:	-	-	-	-
DRUPR	M:	-	-	-	-
	R:	-	-	-	-
MSLPR	M:	-	-	-	-
	R:	-	-	-	-
RUHPU	M:	-	-	-	-
	R:	-	-	-	-
MSMPR	M:	-	-	-	-
	R:	-	-	-	-
DRUPU	M:	-	-	-	-
	R:	-	-	-	-
BAASPU	M:	-	-	-	-
	R:	-	-	-	-
MSLPU	M:	-	-	-	-
	R:	-	-	-	-
MSSPR	M:	-	-	-	-
	R:	-	-	-	-
BADIPR	M:	-	-	-	-
	R:	-	-	-	-
MSMPU	M:	-.02	-	-	-
	R:	.05*	-	-	-
BADIPU	M:	-.02	.00	-	-
	R:	.06*	.01	-	-
MSSPU	M:	.02	.05	.05*	-
	R:	.03	-.02	-.04	-

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