

# **Counseling and college matriculation: Does the availability of counseling affect college-going decisions among highly qualified first-generation college-bound high school graduates?**

Chung Pham<sup>1</sup>, Tracy Keenan

*Center for Education Policy Research, Harvard University, U.S.A.*

*This study examined a unique angle of the relationship between high school counseling and college matriculation by investigating the association between the availability of counseling services to first-generation students and the odds of a highly qualified student not enrolling in a four year college (referred to as a mismatch between qualifications and college attended). A sample of 1 305 highly qualified students from a large urban district in the United States was analyzed. The study found that the student-counselor ratio does not predict the odds of a highly qualified student not going to a four year college, but the first-generation student-counselor ratio does. A one percent decrease in the first-generation student-counselor ratio was associated with a 0.4 percent decrease in the odds that a highly qualified student missed the opportunity to attend a four year college. This study could help districts and administrators target the limited counseling services available currently in many urban school districts to first-generation students in order to increase the college-going rate of these students.*

Copyright © 2011 JAEBR

Keywords: *Counseling, college matriculation*

## **1. Introduction**

The 21st century global economy demands a highly skilled and educated workforce. College and workforce training programs prepare students to meet this demand, and high schools prepare students to be ready for college. However, not all college-ready high school graduates go on to college. Students of different social economic statuses and ethnicities have different rates of college attendance. For instance, students who qualify for subsidized lunch programs are less likely to go to college than students who do not qualify for such programs, and Latino students are much less likely to go to college than white students (Gonzalez et al., 2003).

---

<sup>1</sup> Correspondence to Chung Pham, E-mail: chung.pham@dpsk12.org

One's college going decision largely depends on one's own academic preparation and aspirations (Cabrera & La Nasa, 2001; Catsiapis, 1987; Perna & Titus, 2005), family economic resources (Mazumder, 2003; Belley and Lochner, 2007), family influence/college-going culture (e.g., whether the student has a parent who attended college) (Baumann, 2007; Prado, 2008), college-going culture among peers (Epstein and Karweit, 1983; Treisman, 1992; MacLeod, 1995; Hanushek et al. 2001; Gándara, 2002; Tierney, Colyar, and Corwin, 2003), and school-based factors, such as school quality or teacher/counselor influence (Rowan-Kenyon & Heather T., 2007; Amor, Schwartz and Stiefel, 2006). To increase college matriculation rates, it is crucial that these factors be targeted. Because it is much more difficult to influence exogenous variables such as one's family conditions, culture, or aspirations, school-based factors are the most policy relevant targets.

Social Capital Theory posits that social contacts or connections within and between social networks impact productivity. According to Social Capital Theory in the school context, relationships with school personnel can play an important role in processes such as college applications (Lin, 2001; Kim & Schneider, 2005) for families in which students are the first in their families to apply to college. Social capital in schools provides educational resources and supports. Stanton et al. (1995), Freeman (1997), Gonzalez et al. (2003), and Farmer-Hilton and Adams (2006) highlighted the role of high school counselors as an important source of social capital for students from families with low socioeconomic status (SES).

There is a relatively large body of empirical research that supports this theory. Adelman (1999), McDonough (1997 and 2004), Orfield and Paul (1993) and Plank and Jordan (2001) found that counselors could be highly effective in impacting students' aspirations and achievements. Bryan et al. (2010) showed that student contact with counselors has a significant positive effect on the probability that a student applied to college. Engberg and Wolniak (2010) also highlighted the importance of access to college-linking networks to increase a student's chance of enrolling in college. However, using actual student contacts with counselors to estimate the impact of counseling on college matriculation has a potential threat to the internal validity of the research. For instance, college-aspiring students may be more likely to seek counselors for advice, information, and other resources. However, the same students, because they are highly motivated, could still apply to college regardless of meeting with a counselor. Therefore it is unclear whether students planned to apply to college before working with a counselor or whether the effect actually happened after the contact. If students already want to apply to college before meeting with counselors, then the effect of the counselor would be smaller.

This study contributes to the literature by investigating the potential impacts of the availability of high school counselors to first-generation students on the college matriculation rate of highly qualified students. With the use of counselors' availability rather than actual student contacts with counselors, this research design bypasses the selection bias mentioned above. The benefits of using availability of counselors to first-generation students over student contacts alone are further explained in the following section. In short, if more counseling services being made available to first-generation students are associated with a higher rate of college enrollment, it is likely that the counseling services inspire and assist students in applying to college, although causal inference is not strictly guaranteed.

Furthermore, given that significant resources are being spent by schools to prepare students to be ready for college, the fact that many highly qualified and college-ready students

are not enrolled in colleges or enrolled in two year rather than four year colleges despite their qualifications, indicates an opportunity to better use these limited college-going resources. This study helps schools determine if increasing counseling services to first-generation students could increase the college-going rate of these students and better target college preparatory services in schools.

## 2. Data and analytical approach

This study tests the hypothesis that a higher availability of counseling services for first-generation students is associated with lower rates of highly qualified students *not* attending four year colleges in the fall following high school graduation (referred to as “mismatching”). A student was considered “highly qualified” if they met one of the following three conditions: (1) GPA 3.5 or higher; (2) proficient or advanced in all three subjects of the state’s standardized test for high school students; and (3) a score on the ACT English exam that was greater than or equal to 18 and a score on the ACT Math greater than or equal to 22 *and* scoring greater than or equal to 21 on the ACT Reading (these scores reflect ACT benchmarks indicating that students are college ready (ACT, 2008).

This study focused on a sample of 1 305 highly qualified high school graduates from seven high schools in a large urban public school district in the United States. The sample included all highly qualified students who graduated from the district in 2008, 2009, and 2010.

Research has shown that first-generation students need counseling more than students whose parents attended college because the social capital they get from their families is exhausted as they enter later grades in high school (Prado, 2008; Bryan et al. 2010). Students of parents who attended college will likely be able to rely on resources from their parents and their parents’ connections to colleges and the college application process, in addition to having access to school counselors (Useem, 1992). A school’s social capital is traditionally measured by the student-to-staff ratio. However, a lower student-counselor ratio in a school in which a majority of students are the first in their families to attend college does not necessarily mean student needs are better met. Similarly, a higher student-counselor ratio in a school in which students are primarily second-generation college goers might not present a disadvantage to these students because they could rely on their parents for information and resources. Therefore, the number of first-generation students per counselor is a much more meaningful indicator of school support than just number of students per counselor.

To construct a measure of counseling services available to first-generation students, we utilized the results of a survey conducted by the Education Policy Improvement Center (EPIC) in which a representative sample of students in each school was asked about their mother’s highest level of education. For each school, we used the percentage of students whose mothers’ highest education was less than “some college” as a proxy for the percentage of first-generation students in that school. These data were used to calculate the first-generation student-counselor ratio.

To track whether the students matriculated into a four year postsecondary institution immediately following high school graduation (the fall of the graduation year), we gathered data from the National Student Clearing House (NSCH)<sup>2</sup>. Other variables included in the analyses

---

<sup>2</sup> The National Student Clearinghouse (NSCH) was created in 1993 as a means to confirm the enrollment status of financial aid recipients. The electronic registry now includes 2,700 colleges and universities and claims to cover 91% of U.S. college enrollments. Membership in the Clearinghouse is open to any post-secondary institution that participates in the Federal Title IV program (financial aid) (Romano & Wisniewski, 2003).

were student grade point average (GPA), whether the student received a subsidized lunch, whether the student was enrolled in a special education program, whether the student was an English language learner, students' gender, and students' ethnicity.

After conducting some preliminary descriptive analyses to understand the make-up of the sample, two logistic regression models were utilized to predict the odds of a highly qualified student *not* matriculating to a four-year postsecondary education institution. In Model 1, we predicted the outcome based on the students per counselor ratio, student GPA, and student demographics such as subsidized lunch status, special education status, English language learner status, gender, and ethnicity. Model 2 mirrored Model 1, except the student-counselor ratio was replaced with the first-generation students per counselor ratio.

Table 1: Demographics of the sample population

	Mean	Std. Dev.
Percent mismatching	27%	44%
Percent Whites	45%	50%
Percent African Americans	17%	38%
Percent Hispanics	30%	46%
Percent other races	8%	27%
Percent subsidized lunch	36%	48%
Percent English language learners	27%	44%
Percent Special Education	4%	20%
Percent Male	42%	49%
Number of first-generation students per counselor	122	68
GPA	3.8	0.71
N=1 305		

### 3. Results

#### *Descriptive Analyses*

Each dot in Figures 1 and 2 represents a school in the sample. The horizontal axis displays the student-counselor ratio, and the vertical axis displays the rate at which highly qualified students were *not* enrolled in four year colleges. Figure 1 depicts the finding that there was no detectable correlation between the student-counselor ratio and rates of highly qualified students not going to four-year colleges. For instance, School A had a fairly high student-counselor ratio, but a very low rate of highly qualified students not enrolled in four-year colleges, while School D had a fairly low student-counselor ratio but much a higher rate of mismatching. This is likely because counselors are not the only college resource these students have. In schools where most students are not the first-generation to go to college, the effect of having more or fewer counselors is very unclear. For example, 76% of students in School A were students whose parents have college degrees, while 46% of students attending School D were second (or third, fourth, etc.) generation college goers. It is evident that even though there are fewer students per counselor in School D, the need for counseling service is not better met in School D than in School A.

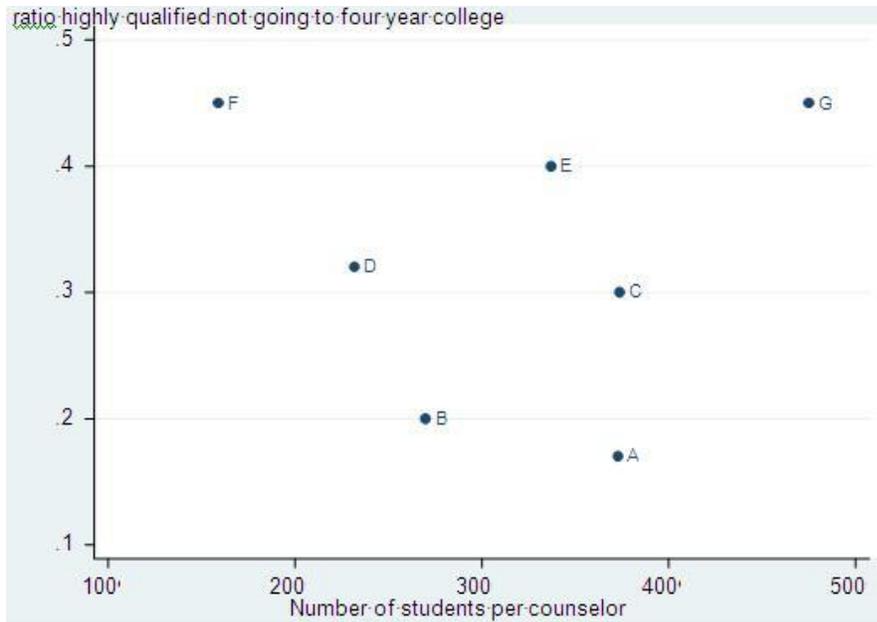


Figure 1. Student-counselor ratios and mismatching rates at each school

Figure 2 shows that the first-generation student-counselor ratio is a much better predictor. With the exception of School F, it is clear that the higher the first-generation student-to-counselor ratio, the lower the chance that a highly qualified student attends a four year college (indicating a mismatch in qualifications and college of attendance).

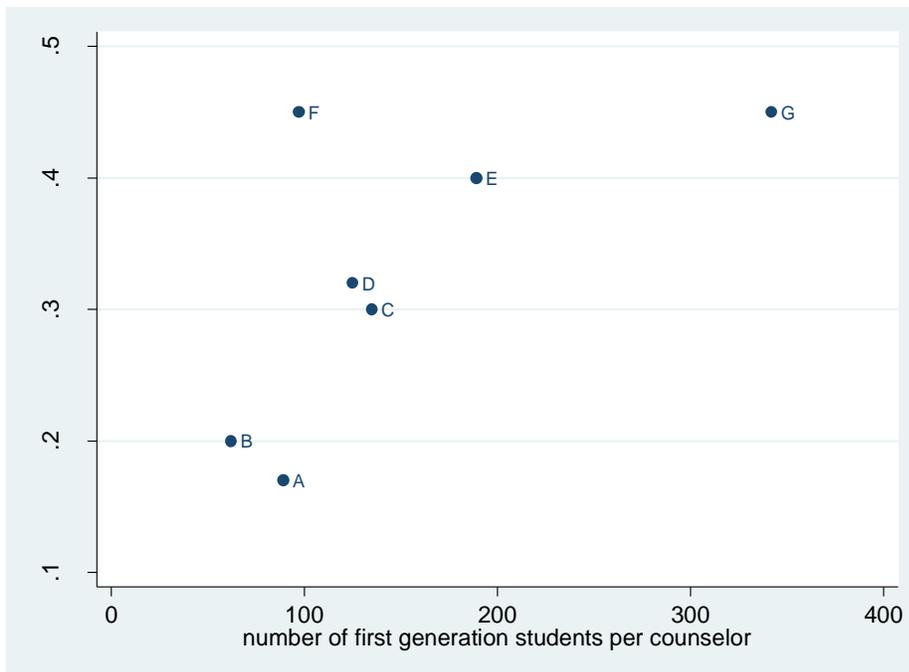


Figure 2. First-generation student-counselor ratios and mismatching rates at each school

Additionally, among highly qualified students, the mismatching rate varied by student GPA and student demographics (see Table 2). There was a strong correlation between mismatching and student GPA. Generally, higher student GPAs were associated with lower chances of mismatching. This is hardly surprising because four year colleges tend to prefer students with higher GPAs in their admission decisions. Furthermore, the mismatching rates by ethnicity highlight the gap between Hispanic students and students of other ethnicities. While the mismatching rates for Whites, African Americans, and students of other races (mostly Asian students) were about equal, the rate for Hispanic students was more than twice as high. Students receiving subsidized lunches were twice as likely to be mismatched compared to students who did not receive subsidized lunches. English language learners were twice as likely to be mismatched as non-English language learners. Students enrolled in a special education program were also more than twice as likely to be mismatched as students not in special education.

Table 2. Relationships between student characteristics and mismatching

	Percent mismatching	Std. Dev.	Number of students
Student GPA			
GPA < 3	43%	50%	136
3 ≥ GPA < 4	34%	47%	645
GPA ≥ 4	14%	34%	501
Student race / ethnicity			
Whites	19%	40%	581
African Americans	20%	40%	221
Hispanics	45%	50%	397
Other races	18%	39%	106
Non subsidized lunch	21%	40%	834
Subsidized lunch	39%	49%	471
Non ELL	22%	41%	954
ELL	41%	49%	351
Non special education	26%	44%	1 250
Special education	60%	49%	55
Student gender			
Female	27%	44%	752
Male	27%	45%	553

### *Multivariate Analyses*

The logistic regression models confirmed that student GPA, ethnicity, subsidized lunch status, English language learner status, and special education status were significant predictors of mismatching. Interestingly, after controlling for other student characteristics such as GPA, subsidized lunch status, English language learner status, and special education status (variables associated with student performance and economic resources available to them), both models revealed that the odds of a highly qualified Hispanic student not going to four -year colleges were still almost twice as high as those of White students. At the same time, African American students<sup>3</sup> and students of other races (mostly Asian) were less likely to be mismatched, but the

<sup>3</sup> In national data sets, African American students are usually more likely to perform poorly than White students after controlling for student demographics and test scores. However, it is very common in this particular district and other large urban districts that when comparing students with the same background and test scores, African American students usually outperform White students.

coefficients were not statistically significant at 0.05 level. This informs us that Hispanic students in this district could be more likely to be first-generation college goers.

The effects of student-counselor ratios on mismatching were also very interesting. Consistent with Figure 1, Model 1 showed that the student-counselor ratio was not correlated with the chance that a highly qualified student did not go to a four-year college. At the same time, consistent with Figure 2, Model 2 found a significant positive association between the first-generation-student-counselor ratio and the chance of a student being mismatched. Specifically, a one percent decrease in the first-generation-student-counselor ratio was associated with a 0.4 percent decrease in the odds that a highly qualified student did not attend a four year college. If the causal inference is valid, this could have a sizable effect.

Table 3. Results from logistic regression models

Model	Model 1			Model 2		
	B	SE	Odds Ratio	B	SE	Odds Ratio
Intercept	1.46	1.80	4.31	-0.47	0.84	0.63
Student GPA	0.75**	0.10	0.47	0.76**	0.10	0.47
Race / Ethnicity						
African American	-0.30	0.22	0.74	-0.30	0.22	0.74
Hispanic	0.64**	0.19	1.90	0.53**	0.19	1.70
Other races	-0.43	0.30	0.65	-0.54	0.31	0.58
Receiving subsidized lunch	0.37*	0.17	1.45	0.29	0.17	1.34
English language learner	0.59**	0.18	1.81	0.57*	0.18	1.77
Special education	1.68**	0.30	5.39	1.67**	0.30	5.30
Gender						
Male	-0.12	0.14	0.89	-0.12	0.14	0.89
Log students per counselor ratio	-0.03	0.31	0.97			
Log first-generation students per counselor ratio				0.40*	0.17	1.49

Note: \* Implies statistical significance at the 0.05 level; \*\* implies statistical significance at 0.01 level

#### 4. Discussion

This study investigated the impact of counseling on college matriculation, based on the Social Capital Theory framework and data from a large school district in the United States. Results from this study support findings from previous research that counseling in high school can play an important role in shaping students' college aspirations and provide them with resources and information to help inform their decision to apply to college and complete the required processes to do so. More importantly, we found that there is still a large "mismatch" in the school district whereby a high percentage of highly qualified students did not go to four-year colleges, and that increasing counseling service available to first-generation-students has the potential to reduce this rate. Research has shown that students who attend two year colleges are less likely than students who enter into four year colleges to persist in postsecondary education to obtain bachelor's degrees (Reynolds, 2009). Therefore, this mismatch in institution attended for highly qualified students is critical for ensuring student success in college. This study may prompt school and district administrators to allocate their resources based on the number of students with greater need rather than the number of students enrolled alone.

While counseling plays an important role in meeting the needs of students from low SES backgrounds (who are more likely to be first-generation college goers (Lohfink & Paulsen, 2005), counselors are often less involved in the college application process for those students than they may want to be because counseling time and energy has been consumed by other tasks such as scheduling courses and testing students (NACAC, 1990; McDonough, 1997 and 2004). Moreover, the student-counselor ratio is often too high. Twenty years ago, the American School Counselor Association (ASCA) and the National Association for College Admission Counseling (NACAC) both recommended a ratio from 100 (ideal) to 300 (maximum) students per counselor (NACAC, 1990). However, we still see no signs of meeting this goal. In our sample, the ratio ranged from 159 to a shocking 475 students per counselor. With such high student-counselor ratios, it would be unrealistic to ask counselors to do all that they are hired to do. Important tasks such as meeting with students and parents regularly to review academic progress, assisting students with their career choices, goal setting, and helping them navigate the college admission and financial aid application process inevitably becomes very difficult. For students whose parents graduated from college, parents can do most of these counseling tasks. However, expecting parents of a first-generation student to know how to fill out a financial aid form and do many of the other tasks associated with applying to college without additional support and resources from schools presents a large challenge. Therefore, there is a need for lower student-counselor ratios, especially in schools with high concentrations of first-generation students.

Students of minority groups, especially Hispanic students, often obtain lower levels of social capital. First-generation students are more likely to be Hispanic or African American, older in age, female, and come from families with low SES (Lohfink & Paulsen, 2005). First-generation students tend to be less exposed to a college-going culture as compared to students whose parents attended college. Studies have shown that first-generation students are more likely to delay their entry into college, attend two-year postsecondary institutions, enroll in college part-time, and need to take remedial courses. These factors are associated with a higher risk of dropping out of postsecondary education, and, specifically, not earning a bachelor's degree (Lohfink & Paulsen, 2005). However, schools serving large populations of students who are more likely to be first-generation college goers, such as minority students, are often not designed to offset this deficit in social capital (Ariazza, 2003; Kozol, 1991; Noeth & Wimberly, 2002). In our sample, for example, schools with high percentages of Hispanic students tended to have higher first-generation student-counselor ratios<sup>4</sup>. Our results indicate that highly qualified Hispanic students were much less likely to go to four year colleges than were highly qualified White students. This is not a coincidence – a high percentage of Hispanic students are the first in their families to attend college. Furthermore, Hispanic students and their families may experience additional barriers in the college going process, such as language barriers. To reduce the Hispanic-White gap in college matriculation, it is imperative that schools take action to identify first-generation Hispanic students to focus their counseling efforts.

Finally, the finding that counseling availability to first-generation students was associated with a higher chance of a qualified student being enrolled in a four year college is consistent with

---

<sup>4</sup> Corwin et al. (2004) found that schools serving large number of minority students tend to have high student-counselor ratios. However, high student-counselor ratios should not be an indicator of needs because in our sample, only two out of four schools with high student-counselor ratio actually served student populations with high concentrations of minority students.

other research findings that four year college students had greater access to counselors while in high school than did two year college students (Gonzales et al., 2003). Despite the potential selection bias whereby four year college students may have sought counselors more actively than community college students, findings suggest that a complicated process like applying to four year colleges, as well as completing such forms as financial aid applications (which may be barriers for students and thus a reason to apply to a two year college), requires more interaction with counselors. This is especially true for first-generation students. First-generation students were more likely than their peers whose parents had attended college to cite costs, location, and being able to work while going to college as reasons to attend a particular institution (Nunez & Cuccaro-Alamin, 1998).

## 5. Limitations

First, it would have been ideal to implement an Instrumental Variable (IV) design whereby actual student contacts with high school counselors could be instrumented with availability of counselors. Unfortunately, we were not able to observe student contacts with counselors, which limit the inference power of this study to association rather than causation. As a result of this limitation, the logistic regression was used as opposed to IV.

Second, despite efforts to collect the best data available, limitations in the data set introduce some caveats to the validity of the study. One such issue was that the survey conducted by EPIC only provided a snapshot in 2009 of the number of counselors and the percentage of students whose parents had an education level higher than high school. Therefore, in this study we assumed that these numbers did not change much between 2009 and 2010. Additionally, we observed that the number of students enrolled in each school was relatively stable over time, and, therefore, believe it is reasonable to assume the number of counselors and percentage of students whose parents attended college (and thereby the student-counselor and the first-generation-student-counselor ratios) were also relatively stable.

Another data set-related issue was the breadth of the NSCH data. Despite the inclusion of most postsecondary institutions, the NSCH does not track all high school graduates. Some students in our sample may have enrolled in institutions that are not covered by the NSCH. These students would be coded as “not enrolled in college” in our data set. While the data has limitations, it is the best data source available in the United States that links high school records with college records. The NSCH’s electronic registry now includes 2 700 colleges and universities and claims to cover 91% of U.S. college enrollments (Romano & Wisniewski, 2003). We believe that this level of coverage is acceptable and does not have significant impacts on our conclusions.

An additional limitation relates to the study sample. This sample of highly qualified students can hardly be nationally representative. The school district in this study serves a large population of minority students and students from low SES backgrounds. Therefore, lessons from this study would likely be best applied to large urban school districts where similar student populations are served.

Finally, family college-going culture has a large influence on a student’s likelihood of attending college, and was not available as a controllable variable in our data. While we were unable to determine if a particular student was a first-generation college goer, we could estimate the percentage of first-generation students in a given school based on the EPIC survey. This provided a school-level estimate of the college-going culture to which students were exposed.

## **6. Implications for schools and districts**

First, schools and districts should actively identify first-generation students on whom to focus their counseling efforts. In most U.S. school districts, information about students is very limited, mainly including students' free or reduced price lunch status, English language learner status, ethnicity, gender, and test scores. Without information on parent education level, schools cannot identify which students are the first in their family to go to college. Moreover, parent education is also a very strong predictor of student success. This fact is widely acknowledged by a large number of studies. For instance, parent education is a strong predictor of high school completion, dropout (Reeves, E., & Breschel, E. 1999; Ingrum and Adrienne, 2006), and college enrollment (Baumann, 2007; Prado, 2008), just to name a few. Analyses at the individual student level using school district administration data will be much stronger if this crucial variable is included. This information could be collected through such methods as district registration forms, parent or student surveys, or a question on the state standardized test.

Second, more counselors should be allocated to schools with high first-generation-student-counselor ratios. With the identification of first-generation students, counselors must actively set up appointments with them and guide them through the complicated, and sometime confusing, college and financial aid application processes. Lower first-generation student-counselor ratio could not only improve the use of limited college preparatory resources, but could also play an important role in matching students to postsecondary institutions to which they would likely be accepted, and tailoring services to the needs of particular students. Further research is needed to determine the effects of first-generation student-counselor ratios with lower achieving students. Another key component to increasing counselor effectiveness is decreasing counselors' workload and breadth of responsibilities. Finding ways to decrease this workload, such as through increased use of technology for certain tasks, or reliance on other staff for test administration, should be considered. Only then can counselors be more involved in college counseling.

Finally, together with identifying first-generation students, school districts should employ predictive models in order to identify students early on for different college counseling strategies tailored to their needs. Particularly, a regression model to help schools predict the probability of a student going to any college (including two year colleges), to four year colleges, and to selective four year colleges based on observed characteristics of the student (GPA, standardized test scores, Advanced Placement course grade average, ACT or SAT scores, etc.) would be of great value. For instance, this model could provide schools with a list of first-generation highly qualified students who would likely be accepted at a selective four year college. By presenting students, teachers, and counselors with this information, this network can work to (1) provide students with the resources they need to apply to the college of their choice, and (2) provide information to students who may not currently be on track to apply to a college of their choosing in order to correct this path and get them on track through the use of counseling, college preparatory courses, and other services. Provided with indicators of student performance and the odds of being accepted to different types of colleges, counselors can better help students get on track academically, select the best college options for that student, and maximize the student's chance of enrolling in college.

## References

- ACT. 2008. College Readiness Standards for EXPLORE®, PLAN®, and the ACT. Retrieved on June 6, 2011 from <http://www.act.org/standard/pdf/CRS.pdf>.
- Adelman, C. 1999. *Answers in the tool box: Academic intensity, attendance patterns, and bachelor's degree attainment*. Washington, D.C. Department of Education.
- Amor, H., Schwartz, A., Stiefel, L. 2006. *Do Good High Schools Produce Good College Students? Early Evidence from New York City*. Vol. *Advances in Applied Microeconomics* 14, 51 - 80.
- Arriaza, G. 2003. Schools, social capital, and children of color. *Race, Ethnicity and Education* 6:1, 71-94.
- Baumann, R. 2007. *Differences in the college enrollment decision across race*. College of the Holy Cross. Department of Economics Faculty Research Series. Paper No. 07-05.
- Belley, P., Lochner, L. 2007. *The Changing Role of Family Income and Ability in Determining Educational Achievement*. NBER Working Paper No. 13527.
- Bryan, J., et.al. 2010. School counselors as social capital: The effects of high school college counseling on college application rates. *Journal of Counseling and Development*. 89. 190-198.
- Cabrera, A. F, La Nasa, S. M. 2001. On the path to college: Three critical tasks facing America's disadvantaged. *Research in Higher Education* 42, 119-150.
- Catsiapis, G. 1987. A model of educational investment decisions. *The Review of Economics and Statistics* 69, 33-41.
- Corwin, Z.B., Venegas, K.M., Oliverez, P.M., Colyar, J.E. 2004. School counsel: How appropriate guidance affects educational equity. *Urban Education* 39, 442-457.
- Epstein, J.L., Karweit, N. 1983. *Friends in school: Patterns of selection and influence in secondary schools*. New York: Academic Press.
- Farmer-Hiltor, A. 2006. Social Capital and College Preparation: Exploring the role of counselors in a college prep school for Black students. *The Negro Educational Review* Vol. 57: 1-2, 2006.
- Freeman, K. 1997 Increasing African Americans participation in higher education: African American high school students' perspectives. *The Journal of Higher Education* 68, 523-550.
- Gándara, P. 2002. A study of high school Puente: What we have learned about preparing Latino youth for postsecondary education. *Educational Policy* 16:4, 474-495.
- Gonzalez, K.P., Stone, C., Jovel, J.E. 2003. Examining the role of social capital in access to college for Latinas: Toward a college opportunity framework. *Journal of Hispanic Higher Education* 2, 146-170.
- Hanushek, E., Kain, J., Markman, J., Rivkin, S. 2001. *Does Peer Ability Affect Student Achievement?* NBER Working Papers 8502, National Bureau of Economic Research, Inc.
- Ingrum, A. 2006 High School Dropout Determinants: The Effect of Poverty and Learning Disabilities, *The Park Place Economist* 14:1 73-79.
- Kim, D. H., Schneider, B. L. 2005. Social capital in action: Alignment of parental support in adolescents' transition to postsecondary education. *Social Forces* 84, 1181-1206.

- Kozol, J. 1991. *Savage inequalities: Children in America's schools*. New York: Harper Perennial.
- Lin, N. 2001. *Social capital: A theory of social structure and action*. New York: Cambridge University Press.
- Lohfink, M., Paulsen, M.B. 2005. Comparing the determinants of persistence for first-generation and continuing-generation students. *Journal of College Student Development* 46:4. 409-428.
- MacLeod, J. 1995. *Ain't no makin' it: Aspirations and attainment in a low-income neighborhood*. Boulder, CO: Westview Press.
- Mazumder, B. 2003. *Family resources and college enrollment*. Economic Perspectives, Federal Reserve Bank of Chicago, 4, 30-41.
- McDonough, P.M. 1997. *Choosing colleges: How social capital class and schools structure opportunity*. Albany, NY: State University of New York Press.
- McDonough, P.M. 2004. *The school-to-College transition: Challenges and prospects*. Washington, DC: American Council on Education.
- National Association for College Admission Counseling (NACAC). *1990 Precollege Guidance and Counseling and the Role of the School Counselor*. Retrieved from; <http://www.nacacnet.org/AboutNACAC/Policies/Documents/RoleofSchlCounsNEW.pdf> (08/07/2011)
- Noeth, R. J., Wimberly, G. L. 2002. *Creating seamless educational transitions for urban African American and Hispanic students*. Iowa City, IA: ACT Policy Research Center.
- Nunez, A.M., Cuccaro-Alamin, S. 1998. First-generation students: Undergraduates whose parents never enrolled in postsecondary education. National Center for Education Statistics. Retrieved on June 27, 2011 from <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=98082>
- Orfield, G., Paul, F. 1993. *High Hopes, Long Odds: A Major Report on Hoosier Teens and the American Dream*. Indianapolis: Indiana Youth Institute.
- Pema, L. W., Titus, M. A. 2005. The relationship between parental involvement as social capital and college enrollment: An examination of racial/ethnic group differences. *Journal of Higher Education* 76, 485-518.
- Plank, S. B., Jordan, W. J. 2001. Effects of information, guidance, and actions on post-secondary destinations: A study of talent loss. *American Educational Research Journal* 38, 947-979.
- Prado, P. 2008. *Comparing educational trajectories of two Chinese students and one Latina student, a social capital approach*. The University of North Carolina Press. Chapel Hill, NC
- Reeves, E., Breschel, E. 1999. *A test of three sociological explanations of high school completion*. Center for Educational Research and Leadership. Occasional Research Paper, 4.
- Reynolds, C.L. DesJardins, S.L. 2009. The Use of Matching Methods in Higher Education Research: Answering Whether Attendance at a 2-Year Institution Results in 37 Differences in Educational Attainment. *Higher Education: Handbook of Theory and Research* 24, 47-97.
- Rowan, K. Heather T. 2007. Predictors of Delayed College Enrollment and the Impact of Socioeconomic Status. *The Journal of Higher Education* 78:2, 188-214

Romano, R. M. Wisniewski, M. 2003. *Tracking community college transfers using national student clearinghouse data*, CHERI Working Paper 36.

Stanton-Salazar, R. D., Dombusch, S. M. 1995. Social capital and the reproduction of inequality: Information networks among Mexican origin high school students. *Sociology of Education* 68, 116-135.

Tierney, W., Colyar, J., Corwin, Z. 2003. Preparing for college: Building Expectations, Changing Realities. *Center for Higher Education Policy Analysis*. Rossier School of Education. University of Southern California.

Treisman, U. 1992. Studying students studying calculus: A look at the lives of minority mathematics students in college. *College Mathematics Journal*, 25:5, 362-372.

Useem, E. 1992. Middle schools and Math groups: Parent's involvement in Children's placement. *Sociology of Education* 65, 263-279.