

IMPROVING THE TRANSITION FROM HIGH SCHOOL TO COLLEGE IN MINNESOTA: RECOMMENDATIONS BASED ON A REVIEW OF EFFECTIVE PROGRAMS

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Purpose

This paper provides information to inform a discussion of how to allocate resources to increase the educational attainment of Minnesota's population by focusing on one aspect of the educational pipeline: the transition from high school to college. The paper draws on existing research and policy reports that examine: (1) demographic characteristics, college enrollment, and degree attainment for the United States and the state of Minnesota; (2) promising practices in Minnesota and the nation that are designed to facilitate the transition from high school to college; and (3) the effectiveness (including the cost effectiveness) of programs that facilitate the transition from high school to college.

The paper begins by describing the individual and societal benefits of college enrollment and the status of college access and degree completion in the United States and Minnesota. The paper then describes three resources required for college access and success (financial, academic, and information) and forces that limit the availability of these resources. Next, the paper identifies programs that are designed to improve the transition from high school to college and reviews evidence of program effectiveness. The paper concludes by offering recommendations for improving the transition from high school to college.

Importance of College Access and Success

Both individuals and society benefit when an individual enrolls in higher education. A gain in lifetime earnings is the most easily observed benefit that accrues to individuals who enroll in higher education. In 2003, average lifetime earnings were 73 percent higher for individuals who attained a bachelor's degree than for individuals who attained only a high school diploma (Baum & Payea, 2004; Baum, Payea, & Steele, 2006). Individuals who participate in higher education also have lower probability of unemployment and poverty, more fulfilling work environments, better health, and longer lives (Baum & Payea, 2004; Baum, Payea & Steele, 2006; Bowen, 1997; Leslie & Brinkman, 1988).

Society also benefits when more individuals go to college. The societal benefits of increased educational attainment include greater national income and productivity, workforce productivity, and economic activity in the community in which the higher education institution is located, as well as lower costs of taxpayer-funded social support programs (e.g., welfare, Medicaid). Society also benefits from lower crime rates, greater community service and civic involvement, improved knowledge and technology, and improved educational outcomes for future generations (Baum & Payea, 2004; Baum, Payea & Steele, 2006; Bowen, 1997).

Postsecondary education is increasingly important to the nation's, and Minnesota's, continued economic prosperity and global competitiveness, given the shift from an industrial economy to an information and technology-driven economy (Advisory Committee on Student Financial Assistance, 2006; Carnevale & Desrochers, 2003; Lumina Foundation for Education, 2006). In recent years, the U.S. has lost ground in the educational attainment of its population, as the share of the 25- to 34-year old population that has completed a postsecondary program is

now lower in the U.S. than in seven other developed nations (Baum, Payea & Steele, 2006).¹ While higher than in some nations (e.g., Spain, Finland), college enrollment rates for 18- to 24-year olds are lower in Minnesota than in Korea and Greece (Minnesota Office of Higher Education, 2007c). The share of students who finish certificates or degrees is also lower in Minnesota than in at least nine other countries, including Japan, Portugal, United Kingdom, Australia, Switzerland, Denmark, Ireland, New Zealand, and France (National Center for Public Policy and Higher Education, 2006).

New jobs increasingly require at least some postsecondary education and the educational requirements of all jobs, including those that once required no more than a high school education, have been rising. For example, 69 percent of white-collar office workers, the largest, fastest-growing, and among the highest-paying categories of employment, had at least some college education in 2001, up from 37 percent in 1973 (Carnevale & Desrochers, 2003).

Projected demographic trends suggest that the demand for college-educated workers will continue to increase in the near future. Over the next 20 years, baby-boomers will retire from the labor force, resulting in a substantial shortage of workers, especially workers with the most education and experience (Carnevale & Desrochers, 2003). Although the number of high school graduates is projected to increase between 2001-02 and 2017-18 (Western Interstate Commission for Higher Education, 2003), this growth will likely be insufficient to meet labor market demands. Carnevale and Desrochers (2003) estimate that, in 2020, the demand will exceed the supply by 20 million for workers overall, and by 14 million for workers with at least some college education.

The Status of College Access And Completion in the United States

Despite the many benefits of higher education, college enrollment and degree attainment rates vary by sex, race/ethnicity, and socioeconomic status (SES). Although men continue to receive the majority of first-professional (51%) and doctoral degrees (52%), women now receive the majority of degrees awarded by colleges and universities nationwide at the associate's (61%), bachelor's (58%), and master's (59%) degree levels (National Center for Education Statistics [NCES], 2005). With the exception of non-resident aliens, women received more than half of all associate's, bachelor's, and master's degrees awarded in 2004-05, regardless of race/ethnicity. The gender gap is particularly large among Blacks, as women received 69% of associate's degrees, 66% of bachelor's degrees, 71% of master's degrees, 64% of first-professional degrees, and 66% of doctoral degrees awarded to Blacks in 2004-05 (NCES, 2006).

The representation of Blacks and Hispanics in higher education declines as the degree level increases. Blacks represented 13% of all public high school graduates in 2003-04, but only 12% of associate's degree recipients, 10% of bachelor's degree recipients, 10% of master's degree recipients, 7% of first-professional degree recipients, and 6% of doctoral degree recipients in 2004-05 (NCES, 2005). Similarly, Hispanics received 12% of all public high school diplomas, but only 11% of associate's degrees, 7% of bachelor's degrees, 6% of master's degrees, 5% of first-professional degrees, and 3% of doctoral degrees (NCES, 2005).

The underrepresentation of Blacks and Hispanics among bachelor's degree recipients is attributable, at least in part, to their lower rates of college enrollment. Only 63 percent of Blacks and 62 percent of Hispanics who graduated from high school in 2002 enrolled in college, compared to 69 percent of whites (NCES, 2005).

College enrollment rates also increase with family income. Although college enrollment rates have generally been increasing over time for all groups, the approximately 30 percentage point gap in college enrollment between low- and high-income students is comparable in size to the gap that existed in the 1960s (Gladieux & Swail, 1999).

Moreover, when they do enroll, Blacks and Hispanics and students from lower-income families are relatively concentrated in for-profit institutions, two-year colleges, and less selective institutions. These institutions not only average fewer resources than those attended by the majority of white students from middle and upper-middle class backgrounds, but also are associated with lower levels of educational attainment (Baum & Payea, 2004).

While acknowledging the substantial cost of expanding the capacity of postsecondary educational institutions, Vernez, Krop, and Rydell (1999) use benefit-cost analysis to demonstrate that the costs of raising the educational attainment of Blacks and Hispanics to the level of Whites would be recouped in about ten years. The analyses consider 20 population groups (i.e., groups differentiated by ethnicity, immigration status, gender, and age) and ten “families” of government social-welfare programs (e.g., unemployment insurance, food programs, Medicaid) and reflect social program usage in 1991. The analyses show that increased levels of educational attainment are associated with lower usage, and thus lower societal costs, of government programs, as well as higher tax revenues and higher disposable incomes for individuals. Increases in income, and thus tax revenues, are especially great when the level of education increases from some college to college graduate (Vernez et al., 1999).

The Status of College Access and Completion in Minnesota

Minnesota has much to be proud of with regard to the educational attainment of its population. The performance of Minnesota exceeds that of the nation as a whole on the following attainment indicators: percentage of 9th graders who graduate high school in four years (84% versus 70%), percentage of high school graduates who enroll directly into postsecondary education (65% versus 56%), percentage of first-time, full-time students who complete bachelor's degrees within six years (58% versus 56%), percentage of individuals who complete associate's degrees in three years (34% versus 29%), and first-year retention rates at four-year institutions (77% versus 76%) (National Center for Higher Education Management Systems [NCHEMS], 2007). The likelihood that ninth graders enroll in college by age 19 is greater in Minnesota than all but two other states (New Jersey and North Dakota) (Minnesota Office of Higher Education, 2006). Moreover, a higher share of the 25- to 34-year old population of Minnesota than the nation as a whole or the "top ten new economy states" holds at least an associate's degree (47% versus 38% and 43%, respectively) or a bachelor's degree (36% versus 30% and 35%) (Minnesota Office of Higher Education, 2007c). *Measuring Up 2006*, the nation's state-by-state report card on higher education, awarded Minnesota an "A" for participation and an "A" in completion and labeled Minnesota "a top-performing state" in these categories (National Center for Public Policy and Higher Education, 2006).

Despite this strong performance, however, challenges remain. First, although above the national average, Minnesota's performance on many indicators of college enrollment and persistence is below that of "top-performing states" and the "top ten new economy states." Using data from the Progressive Policy Institute, the Minnesota Office of Higher Education (2007c) reports that the ten states with the best potential for success in "the new economy" are

Washington, California, Colorado, Connecticut, Delaware, Massachusetts, New York, New Jersey, and Virginia; Minnesota ranked 13th on this index. These data show that the share of 18- to 24-year olds enrolled in postsecondary education in 2004 in Minnesota was equal to the national average (34%) but below the rate for the top ten new economy states (37%) (Minnesota Office of Higher Education, 2007c). Only 78% of first-time, full-time students at four-year colleges and universities in Minnesota in 2004 persisted to the second year, compared with 83% of first-time, full-time students at four-year colleges and universities in the new economy states (Minnesota Office of Higher Education, 2007c). At two-year colleges, only 57% of Minnesota's first-time, full-time students returned for the second year, compared with 63% of first-time, full-time students in the new economy states. Similarly, the National Center for Public Policy and Higher Education (2006) reports that 38% of 18- to 24-year olds in Minnesota were enrolled in college, down from 43% a decade earlier, and below the 41% enrollment rate for the top-performing states.

A second challenge is variations in educational attainment across counties within the state of Minnesota. An analysis that considers educational attainment, economic outlook, and population shifts shows that “educational needs” are substantially greater in Mille Lacs, Pine, Kanabec, and Beltrami counties than in other counties in the state (Davis, Noland & Kelly, 2006). Disaggregating the dimensions of the educational needs index shows that educational attainment is particularly problematic in three counties: Pine, Kanabec, and Mille Lacs. Economic challenges, as reflected by the unemployment rate, poverty rate, family income, and other indicators, are especially great in a higher number of counties, but most notably Roseau, Clearwater, Red Lake, Todd, and Marshall counties. More than 30% of Minnesota's counties face challenges associated with changes in the population composition (e.g., population growth

of different age segments of the population, percentage of Black, Hispanic, and Native American). Among the counties with the greatest “market” challenges are Scott, Sherburne, Carver, Chisago, and Washington (Davis et al., 2006).

A third challenge is the persisting gaps in college enrollment and degree completion rates in Minnesota based on race/ethnicity, family income, and other demographic characteristics. For example, smaller shares of Blacks, Hispanics, and American Indians than of Whites and Asians enroll in college directly after graduating from high school: 57%, 47%, and 46% versus 66% and 74% (Growth & Justice, 2007). Among Minnesota high school graduates between 2000 and 2004, smaller shares of Blacks and Hispanics (44% and 39%, respectively) than of Whites and Asians (49% and 56%, respectively) enrolled in Minnesota postsecondary institutions (Minnesota Office of Higher Education, 2006). Six-year bachelor’s degree completion rates and three-year associate degree completion rates are also lower for Blacks, Hispanics, and American Indians than for Whites and Asians (Growth & Justice, 2007). The odds of completing a degree for a Minnesota high school graduate are substantially lower for Blacks, Hispanics, and Native Americans than for Whites and Asians (20%, 18%, and 15% versus 28% and 27%) (Minnesota State Colleges & Universities, 2005).

The lower educational attainment for Blacks and Hispanics than for Whites is especially problematic when considered in light of projected demographic trends. Students of color are projected to represent 20% of Minnesota high school graduates by 2015, up from 13% in 2004 (Minnesota Office of Higher Education, 2006). Between 2001-02 and 2017-18, the numbers of Black and Hispanic public high school graduates in Minnesota are projected to increase substantially (193% and 470%, respectively), while the number of White public high school graduates is projected to decline by 17% (WICHE, 2003). In other words, the fastest growing

groups in Minnesota are the groups with among the lowest rates of college enrollment and degree completion.

In Minnesota, college enrollment rates for recent high school graduates are also substantially lower for students from low-income families (40%) and those attending urban high schools (51%) than for other students (Growth & Justice, 2007). When they do attend, students from low-income families are relatively concentrated in the state's public two-year institutions. Specifically, among full-time, full-year dependent undergraduates who were enrolled in a Minnesota, not-for-profit institution in 1999-00, 27% of students in the lowest family income quintile attended a public two-year institution, compared with only 13% of students in the highest family income quintile (Minnesota State Colleges & Universities, 2005). Conversely, only 22% of undergraduates in the lowest family income quintile attended a private four-year institution, compared with 34% of undergraduates in the highest family income quintile (Minnesota State Colleges & Universities, 2005).

Requirements for College Access and Success

Research consistently shows that the primary requirements for college access and success are financial resources, academic preparation, and college-related knowledge (Martinez & Klopott, 2005; Perna, 2006). Although researchers debate the relative importance of financial resources and academic preparation, all three are critical.

Financial Resources

One barrier to college enrollment and degree attainment is inadequate financial resources. The Advisory Committee on Student Financial Assistance (2006) estimates that, between 2000

and 2010, 1.4 million to 2.4 million students from low- and middle-income families will be academically qualified for college but will not complete a bachelor's degree because of financial barriers. Research consistently shows a positive relationship between family income and such outcomes as number of college applications submitted, enrollment in either a two-year or four-year institution, enrollment in a four-year institution, and number of years of schooling completed (Ellwood & Kane, 2000; Hofferth, Boisjoly, & Duncan, 1998; Hurtado et al., 1997; Kane, 1999; Perna, 2000).

Recent trends in tuition and financial policies and practices seem to be exacerbating the financial barriers to college enrollment and success. For example, over the past two decades, tuition has increased faster than family income. After controlling for inflation, average tuition increased between 1995-96 and 2005-06 by 34 percent at private four-year institutions and 52 percent at public four-year institutions, while the median income for families with parents between the ages of 45 and 54 increased by only 3 percent over this period (College Board, 2006).

The types of financial aid that are available to students have also shifted over time. Originally designed to ensure access to higher education for low-income students, the real value of the Federal Pell Grant has failed to keep pace with increases in tuition. In 2005-06, a Federal Pell Grant covered 33% of the average published price of tuition, fees, room, and board at a public four-year institution, down from 42% in 2001-02. The share of financial aid awarded to postsecondary education students in the form of Pell and other grants declined from 48% in 1995-96 to 42% in 2005-06. Today, more than half (52%) of all aid to undergraduates is in the form of loans (College Board, 2006).

The federal government has also signaled a reduced commitment to providing public resources to the most economically needy through the establishment in 1997 of federal tuition tax credits (i.e., Hope Scholarship Credit and the Lifetime Learning tax credit). In 2004 only 11 percent of recipients of these tax credits were from families with adjusted gross incomes below \$25,000, while 23 percent were from families with adjusted gross incomes between \$75,000 and \$99,999 (College Board, 2006).

By providing various federal and state tax advantages, state-sponsored pre-paid tuition and college savings plans (i.e., 529 plans) represent another way that the public sector is directing resources away from promoting access to college for low-income students and placing greater emphasis on increasing the affordability of college for middle- and upper-income students. All 50 states and the District of Columbia now offer a college savings plan (College Savings Plan Network, 2007). Administered by the Minnesota Office of Higher Education, Minnesota's 529 College Savings Plan offers investors the opportunity to contribute up to \$235,000 per beneficiary. The earnings are deferred from federal and Minnesota state income taxes until the funds are withdrawn. Funds may be withdrawn to pay the beneficiary's costs of attending an eligible college or university (e.g., tuition, fees, books, supplies). (Minnesota Office of Higher Education, 2007e).

Several indicators suggest that public colleges and universities in the state of Minnesota are not affordable to all of the state's residents. Although 43 states scored below Minnesota for the "affordability" category in *Measuring Up 2006* (a category based on a family's ability to pay for two-year and four-year colleges in the state, the availability of need-based financial aid and low-priced colleges, and average student debt), Minnesota (along with four other states) still

received only a “D” for this category (National Center for Public Policy and Higher Education, 2006).

The net price (tuition, room and board, less financial aid) of attending a college or university as a share of family income is also higher in Minnesota than in many other states and has increased over the past decade (National Center for Public Policy and Higher Education, 2006). In 2005, net price as a share of family income was 22% at community colleges, 26% at public four-year institutions, and 54% at private four-year institutions (National Center for Public Policy and Higher Education, 2006). The ratio of net price to income is especially high for those in the lowest family-income quintile: 52% for community colleges, 59% for public four-year institutions, and 133% for private four-year colleges and universities (National Center for Public Policy and Higher Education, 2006). The Minnesota Office of Higher Education (2007c) reports that, for the Minnesota State Grant award, the expected family contribution to the price of attending a postsecondary educational institution has increased since 1992 for those in the lowest three quintiles of family income.

Academic Preparation

Research consistently shows that academic preparation and achievement are positively related to numerous college related-outcomes including: high school graduation rates (Cabrera & La Nasa, 2000), college entrance examination scores (Horn & Kojaku, 2001), college enrollment rates (Perna, 2000), representation at more selective colleges and universities (Horn & Kojaku, 2001), rates of transfer from a two-year to a four-year institution (Cabrera, La Nasa, & Burkam, 2001), college grades (Warburton, Bugain, Nuñez, & Carroll, 2001), college persistence rates

(Horn & Kojaku, 2001; Warburton et al., 2001), and college completion rates (Adelman, 1999, 2006; Cabrera & La Nasa, 2000; Cabrera, La Nasa, & Burkam, 2001).

Being academically prepared for college appears to be particularly important to the college enrollment of students from lower-income families (Cabrera et al., 2001) and the bachelor's degree completion of African Americans and Latinos (Adelman, 2006). Adelman concluded from his analyses of the secondary and postsecondary educational experiences of the class of 1992 that observed racial/ethnic gaps in bachelor's degree attainment would be substantially reduced if more Blacks and Hispanics completed a rigorous curricular program in high school.

But, many indicators illustrate lower levels of academic preparation for college for low-income, Black, and Hispanic students than for other students (Perna, 2005b). For example, substantially smaller shares of Blacks, Hispanics, and American Indians than of Whites and Asians leave public high schools "ready" to attend a four-year college, where readiness is defined as graduating from high school, taking certain courses in high school, and possessing basic literacy skills. Specifically, of the public high school class of 2001, only 20% of Blacks, 16% of Hispanics, and 14% of American Indians left high school ready to attend a four-year college, compared with 37% of Whites and 38% of Asians (Greene & Forster, 2003).

Several indicators suggest the need to improve academic preparation in Minnesota. *Measuring Up 2006* awarded Minnesota a "B" for preparation for postsecondary education and training, an indicator representing high school completion, K-12 course taking, and K-12 student achievement (National Center for Public Policy and Higher Education, 2006). Although *Measuring Up* notes that Minnesota's performance on indicators of college preparation has improved over the past 13 years and that Minnesota is a top performer on some of these

indicators, challenges remain. For example, smaller shares of high school students in Minnesota than in the top-performing states enroll in upper-level math (46% versus 64%) and upper-level science (29% versus 40%). Only 16% of 8th graders in Minnesota are enrolled in algebra, compared with 35% of 8th graders in the top-performing states (National Center for Public Policy and Higher Education, 2006). Rates of taking Advanced Placement (AP) exams are also lower in Minnesota than in the nation: 19% versus 24% (Growth & Justice, 2007). The percentage of Minnesota AP-test-takers who earn at least a 3 on the exam is higher than the national average (67% versus 63%) (Minnesota Office of Higher Education, 2007). But, because of the low test-taking rates, the percentage of Minnesota high school students who earn a score of 3 or higher on AP exams is lower than the national average (12% versus 15%) (Growth & Justice, 2007). AP exams are offered in only 222 of Minnesota's more than 500 high schools, down from a peak of 251 high schools in 2004 (Minnesota Office of Higher Education, 2007a).

In Minnesota, academic readiness for college is also lower for Blacks, Hispanics, American Indians and students from low-income families than for other students. Substantially smaller shares of Blacks, Hispanics, and American Indians than of Whites and Asians complete advanced math in high school (13%, 19%, and 19% versus 41% and 44%, Growth & Justice, 2007), one of the most important predictors of bachelor's degree attainment (Adelman, 2006). Blacks, Hispanics, and American Indians represented fewer than 5% of AP-test-takers in 2005-06 (Minnesota Office of Higher Education, 2007a). Moreover, smaller shares of Blacks, Hispanics, and American Indians than of Whites and Asians earned grades of 3 to 5 on the exams: 34%, 54%, and 53% versus 66% and 57% (Minnesota Office of Higher Education, 2007a). Although average ACT scores are higher in Minnesota than in any other ACT-test-taking state (i.e., states in which at least 50% of college-bound high school seniors take the

ACT), only 29% of Minnesota's ACT test-takers are academically ready for college (Minnesota Office of Higher Education, 2007b). Moreover, smaller shares of Blacks, Hispanics, and American Indians than of Whites are "college ready." Specifically, only 5% of Blacks, 17% of Hispanics, and 11% of American Indians are college ready, based on their scores on the English, reading, math, and science components of the ACT, compared with 19% of Asians and 33% of Whites (Minnesota Office of Higher Education, 2007b).

The inadequacy of academic preparation for college in Minnesota may also be suggested by the magnitude of college students' enrollment in remedial coursework. Likely in part because the Minnesota State Colleges and University System requires all two-year students to take placement tests, 32% of public high school graduates who enrolled at a public college or university in Minnesota participated in at least one developmental or remedial course in 2000 (Minnesota State Colleges & Universities, 2002). More than half of the developmental or remedial courses were in math (57%), one-fourth were in writing (26%), and 15% were in reading. Participants in developmental and remedial coursework represented 390 public high schools in Minnesota, with the share of graduates participating in developmental and remedial coursework ranging from 11% to 81% (Minnesota State Colleges & Universities, 2002).

One force that contributes to the lower levels of academic preparation for low-income, African American, and Hispanic students is that these students are disproportionately placed in non-academic curricular tracks and low-ability groups (Gamoran & Mare, 1989; Hallinan, 1996; Lucas, 1999; Oakes, 1995; Perna, 2005b). Research consistently shows that college enrollment rates are higher among students who participate in an academic or college preparation curricular program (Hossler, Braxton, & Coopersmith, 1989; St. John & Noell, 1989; Jackson, 1990; St.

John, 1991; Altonji, 1992; Lucas, 1999; Perna, 2000) and lower for students who participate in a vocational curricular program (St. John, 1991) even after controlling for other variables.

A second force that limits academic preparation for low-income, African American, and Hispanic students is that rigorous courses (as well as qualified teachers and other resources) are typically less available in the schools that these groups attend than in other schools (Adelman, 2006; Perna, 2005b). Schools that are located in more affluent areas typically offer more rigorous academic coursework than schools located in less affluent areas (Gándara, 2002; Oakes & Guiton, 1995). Schools with predominantly African American and Latino student also offer fewer college preparation courses than other schools (Oakes & Guiton, 1995). Rigorous mathematics courses (e.g., trigonometry, pre-calculus, and calculus) are substantially less common at the schools attended by students from low- than high-socioeconomic status (SES) and Latinos than Whites or Asians (Ademan, 2006).

A third force that limits academic preparation is the lack of alignment between K-12 and higher education systems. Developed and operated separately, most K-12 and higher education systems are characterized by different curricular requirements, assessments, and accountability measures (Kirst & Venezia, 2004; Martinez & Klopott, 2005; Venezia, Kirst, & Antonio, 2003). A few states (e.g., New York) have aligned their high school exit and college entrance exams while a few other states (e.g., Arkansas, Oklahoma, Texas) have made a college preparatory curriculum the “default” core curriculum for high school students (Martinez & Klopott, 2005). Nonetheless, in most states (including Minnesota), a student who completes the minimum high school graduation requirements may not have fulfilled the curricular requirements to enter the state’s public four-year colleges and universities. For example, in Minnesota, a student must complete three years of science to both graduate from high school and enter either a Minnesota

state college or the University of Minnesota. But, the specifics of these and other requirements vary, as a student must complete one credit in biology and two credits in any science in order to fulfill the high-school graduation requirement, but one year of biology and one year of physical science, including a laboratory experience, as well as at least one additional year of science, in order to meet the University of Minnesota's enrollment requirements (Minnesota Department of Education, 2005).

Knowledge and Information

One of the most widely studied aspects of college-related information pertains to students' and families' knowledge of college prices and financial aid. Although relevant information seems to be widely available (Perna, 2006), several recent reports suggest that most adults, parents, and students are uninformed or poorly informed about the price of attending college and the availability of financial aid (U. S. Government Accountability Office [GAO], 1990; Grodsky & Jones, 2004; Horn, Chen & Chapman, 2003; Ikenberry & Hartle, 2000; Perna, 2004). Although some students and parents may be unaware of college prices and financial aid because they do not plan to attend college (Grodsky & Jones, 2004), even students and parents who report that they expect college attendance lack awareness and understanding about college prices and financial aid (Horn et al., 2003).

Levels of awareness and understanding of college prices and financial aid appear to be particularly low among Latino and Black students and parents (Grodsky & Jones, 2004; Horn et al., 2003; Immerwahr, 2003; Tomás Rivera Policy Institute, 2004; Tornatzky, Cutler & Lee, 2002) and among parents who have no direct personal experience with college (Brouder, 1987; Hossler, Schmit & Bouse, 1991). Inadequate knowledge of college prices and financial aid may

be one cause of persisting gaps in college enrollment across racial/ethnic and socioeconomic status groups (see McDonough & Calderone, 2006).

A variety of college-related outcomes are lower for students who have less knowledge about college prices and financial aid than for other students (GAO, 1990; Perna, 2004).

Although the direction of causality is ambiguous, research consistently shows that students' and parents' understanding of college prices and financial aid is positively related to such outcomes as college expectations (Flint, 1993; Horn et al., 2003), application (Cabrera & LaNasa, 2000), enrollment (Plank and Jordan, 2001), and choice (Ekstrom, 1991), as well as such college financing strategies as students' willingness to borrow, students' use of financial aid, parental saving for college (Ekstrom, 1991; Flint, 1997), and student application for financial aid (GAO, 1990). Based on her qualitative study, Freeman (1997) concluded that a perceived inability to pay college costs restricts the college enrollment of African Americans. Other qualitative research suggests that college prices are a primary determinant of both application and final enrollment decisions for first-generation, low-SES Chicanas (Ceja, 2001).

Consistent with the assumption that high school personnel, especially school counselors, are an important source of college-related information, research also shows that the likelihood of enrolling and succeeding in college increases with the availability of support from high school personnel (Plank & Jordan, 2001). Not surprisingly, support from high school counselors is especially important when parents do not have the knowledge, information, and other resources that are required to adequately guide their children (Furstenberg, Cook, Eccles, Elder, & Sameroff, 1999; Lareau, 1987; McDonough, 1997; Tierney & Auerbach, 2005). According to the 2004 Counseling Trends Survey by the National Association for College Admissions Counseling (NACAC), 85% of counselors from the lowest-income schools believe that parents were either

“not knowledgeable” or “slightly less knowledgeable than average” of financial aid, whereas 74% of counselors from the highest-income schools reported that parents were “slightly more knowledgeable than average” or “very knowledgeable” about financial aid (Hawkins & Lautz, 2005). One exploratory study suggests that Hispanics often make college-related decisions with little input from adults because their parents lack information about college and because the schools the students attend do not provide the necessary information (Immerwahr, 2003).

Based on their review and synthesis of prior research, Cabrera and La Nasa (2000) concluded that students and parents need to know what is required to become academically qualified to enroll in college when students are in the 6th, 7th, and 8th grades. But, descriptive analyses show that students and parents only acquire accurate information about college costs and financial aid during the latter years of high school – after they have made critical, and perhaps irreversible, decisions, particularly about their academic preparation (Perna, 2005a).

The availability of counselors to provide necessary college counseling is severely limited, especially in Minnesota (McDonough, 1997, 2005; NACAC, 2006). In 2004, the average number of students per counselor at public schools nationwide was 488 (National Association for College Admissions Counselors [NACAC], 2006). In Minnesota, the number of students per counselor at all public schools in the state (792 students per counselor in 2004) is higher than in all other states except California and the District of Columbia (NACAC, 2006). Moreover, this high average student-to-counselor ratio masks differences across schools, as student-to-counselor ratios are typically higher in public than in independent high schools and increase with the total enrollment of the high school (McDonough, 1997; 2005). College-related counseling is also generally less available in schools with predominantly low-income and/or minority student populations than in other schools (McDonough, 1997, 2005).

Even when available, counselors face many challenges in their efforts to provide college-related counseling (Perna et al., in press). College counseling is just one of a counselor's responsibilities, as school counselors also engage in a range of other activities, including crisis intervention counseling, developmental counseling, scheduling, test administration, and discipline (McDonough, 2005; NACAC, 2006; Kirst & Venezia, 2004). Most counselors allocate less than 70% of their time to direct student services (McDonough, 2005). The availability of college counseling is also limited by the dual role of counselors as mentors and gatekeepers, the short-term duration of interactions between counselors and students, and barriers that limit the development of "trusting" relationships between counselors and students, especially working-class minority students (Stanton-Salazar, 1997). Teachers are often unable to provide required college-related information, at least in part, because of their focus on other priorities, including reducing high school dropout rates and teen pregnancies (Immerwahr, 2003), and because they often have low expectations for African American and Hispanic student attainment (Freeman, 1997; Immerwahr, 2003).

In short, individuals who most likely require college counseling, i.e., students from low-income, minority, and first-generation families, are the least likely to have access to regular one-on-one college counseling through the schools that they attend (McDonough, 2005). Black, Hispanic, and low-income students often lack trust and confidence in counselors because of perceived racist and socioeconomic stereotyping in advising (Gándara & Bial, 2001). College counseling is also more common for students in Advanced Placement, honors, and college preparatory curricular tracks (the curricular tracks in which African American, Hispanic, and low-income students are underrepresented) than for students in other tracks (Kirst, & Venezia, 2004; McDonough, 2005). Moreover, the nature of college advising also varies, as one study

shows that counselors are more likely to encourage students with higher socioeconomic status than students with middle and lower socioeconomic status to attend a four-year college or university (Linnehan, 2006).

Promising Programs For Increasing College Access and Success

The federal and state governments, philanthropic organizations, non-profit organizations, and other entities have developed numerous policies and programs with the goal of improving students' transition from high school to college. These policies and programs typically address one or more of the barriers described above: financial resources, academic preparation, and knowledge and information.

Despite the plentitude of programs and magnitude of investment in these programs, however, relatively little rigorous research examines the effects or cost-effectiveness of these programs. Many programs self-report that their program improves such outcomes as college preparatory coursework in high school, high school graduation, postsecondary educational attendance, four-year college enrollment, and college admissions test scores (Cunningham, Redmond & Merisotis, 2003; Gándara & Bial, 2001). Nonetheless, as others (e.g., Cunningham et al., 2003; Gándara & Bial, 2001; Perna, 2002; Swail, 2004) have noted, few of these program “evaluations” provide a rigorous assessment of the impact of the program relative to some comparison or control group. Prior research often fails to control for other explanations for the observed positive relationships, particularly students' prior academic performance (Bailey & Karp, 2003). Moreover, research design limitations often restrict the conclusions that may be drawn from available studies, particularly the extent to which participation in a program causes particular student outcomes (California Postsecondary Education Commission, 2004; Lerner &

Brand, 2006). In their review of research examining the effectiveness of pre-college outreach programs, Schultz and Mueller (2006) noted that “Gándara and Bial (2001) found only 13 programs that had an acceptable level of evidence for effectiveness... [and that] the search conducted for this review found only seven additional programs with such evidence available” (p. 4). Lerner and Brand identified 22 SPLO programs that have “a third-party evaluation or have participated in a semi-rigorous data collection effort,” although data for even these 22 evaluations are incomplete and typically do not include comparisons between program participants and a control group (p. viii). Based on their review of 22 evaluations of secondary-postsecondary learning options (SPLOs), Lerner and Brand concluded that available data and information are insufficient to determine the cost-effectiveness of these programs. Similarly, in their review of available research, Bailey and Karp (2003) found that only 21 of 45 relevant articles and reports included attention to program outcomes. Based on the meagerness of available research, Bailey and Karp end their report by stating, “If we were to state one conclusion from this review, it would be that so far we know little that is definitive about the overall characteristics and effects of these [dual-credit] programs” (p. 31-32). Others note that little research or data are available to understand the effects of programs on college access and success (Bailey & Karp, 2003; Blanco, 2006a; Michelau, 2006; Prescott, 2006).

As a result, like previous reviews (e.g., Gándara & Bial, 2001; Cunningham et al. 2003; Lerner & Brand, 2006; Schultz & Mueller, 2006), this review of college transition programs is limited by the paucity of rigorous research. For only three programs (Quantum Opportunities Program, Early College High Schools, and Admission Possible) are data available describing the return on investment.

This review of available research is also limited for other reasons. First, as virtually all existing research uses a correlational rather than causal design, existing research does not permit conclusions about causal relationships between program participation and college-related outcomes. Second, comparisons of benefits across programs are limited by differences in the populations served by particular programs (and the resulting variation in the magnitude of barriers limiting college enrollment). Third, because existing programs have different goals, existing programs are designed to address a variety of college-related barriers (e.g., financial resources, academic preparation, and information) and achieve a range of college-related goals. These outcomes include higher college enrollment and graduation rates, as well as goals that indirectly promote college enrollment and graduate, including greater academic preparation for college, increased interest in college, improved high school graduation rates, etc.

Despite these limitations, this review identifies a number of programs that show promise for improving the transition from high school to college. The review is organized based on the college-access requirements that the programs are designed to address: financial resources, academic preparation, and information. Table 1 summarizes the programs that are described in this review, the barriers to college access and success that the programs are designed to address, and the outcomes that are associated with the programs. The review is limited to programs that, based on the available information, show promise of facilitating the transition from high school to college.