

# Postsecondary Access and Success for First-Generation College Students

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## Introduction

A college education is considered the key to achieving economic success and social mobility in American society. Higher levels of educational attainment are related to higher incomes and lower rates of unemployment, and the earnings gap between high school and college graduates only widens over time.<sup>1</sup> While access to higher education has expanded dramatically in recent years, students whose parents did not go to college remain at a distinct disadvantage. First-generation college students, most of whom come from low-income and minority backgrounds, face a number of challenges—from poor academic preparation to inadequate finances to a lack of support from peers or family members—that make it more difficult for them not only to get into college but also to get through it. This article will review recent research on first-generation college students, focusing on the demographic and educational characteristics of this population, the factors that affect their access to and success in college, and the interventions targeted toward better serving their needs in postsecondary education.

## Characteristics of First-Generation College Students

First-generation students—students whose parents have not attended college and/or have not earned a college degree—differ from their peers in ways that reduce the likelihood that they will attend and succeed in college. First-generation students are disproportionately overrepresented in the most disadvantaged groups relative to participation in higher education.<sup>2</sup> Demographically, first-generation students are more likely to be female, older, Black or Hispanic, have dependent children, and come from low-income families than students whose parents have college degrees. All of these characteristics are independently associated with lower rates of college attendance and degree attainment, they are all interrelated, and they intersect with first-generation status to limit postsecondary opportunities and outcomes for students whose parents did not go to

college.<sup>3</sup> The enrollment characteristics of first-generation students who do matriculate to college reflect the social and economic challenges associated with their demographic characteristics. Research has shown that first-generation college students are more likely to delay entry into postsecondary education, to begin college at two-year institutions, to commute to campus, to take classes part-time and discontinuously while working full-time, and to need remedial coursework—all characteristics that put students at risk for dropping out of college without earning a degree, particularly the bachelor's degree.<sup>4</sup> The demographic and enrollment characteristics of first-generation students combine to create conditions that lower the chances that these students will go to and graduate from college. However, research has shown that first-generation status is itself a risk factor, even after controlling for students' demographic backgrounds, academic preparation, enrollment characteristics, and academic performance in college, that limits postsecondary access and success for this population.<sup>5</sup>

Students whose parents have no college experience are much less likely to go to college, especially a four-year college or university, than their peers. According to data from the National Education Longitudinal Study (NELS:88), less than half (47 percent) of students whose parents did not go to college enrolled in any postsecondary institution the year after graduating from high school compared to 85 percent of students whose parents had college degrees.<sup>6</sup> The majority of first-generation students who do attend college enroll in the two-year sector or below. In the NELS:88 cohort of 1992 high school graduates, 56 percent of first-generation students who did enroll in postsecondary education within two years attended a two-year institution or less compared to 23 percent of students whose parents had college degrees.<sup>7</sup> According to data from the 1995-1996 Beginning Postsecondary Study, 47 percent of all entering postsecondary students were first-generation. First-generation students were overrepresented among entering students at less-than-two-year and two-year institutions, where they made up 73 percent and 53 percent of the population respectively, and they were underrepresented at four-year institutions, where they made up 34 percent of the entering student population.<sup>8</sup>

First-generation students are not only less likely to attend college, they are also less likely to persist to degree. As reported in Chen's (2005) recent research using data from NELS Postsecondary Education Transcript Study,<sup>9</sup> first-generation students who attended any postsecondary institution (two- or

four-year) were twice as likely to leave without earning a degree compared to students whose parents had college degrees, 43 to 20 percent respectively. Even among students who expected to earn bachelor's degrees and attended four-year institutions, first-generation students were much more likely to leave (29 versus 13 percent) and much less likely to earn a degree (47 versus 78 percent) than students whose parents had a college degree. This gap remained even after taking a number of related demographic and educational factors into account. Overall, only 24 percent of first-generation students who graduated from high school in 1992 and enrolled in college earned a bachelor's degree by the year 2000 compared to 68 percent of students whose parents went to college.<sup>10</sup> The findings from the recent NELS study are consistent with previous research which has found that first-generation college students are at a disadvantage relative to their peers with regards to persistence, especially during the crucial first year of enrollment, and degree attainment even after controlling for related factors.<sup>11</sup>

First-generation college students remain at a disadvantage relative to their peers even after earning a college degree, at least with respect to graduate school enrollment. Research has shown that first-generation students who earn a bachelor's degree are less likely to continue on to graduate school overall, and less likely to enroll in first-professional and doctoral degree programs in particular.<sup>12</sup> These gaps exist even after controlling for other demographic, educational, and economic factors related to graduate school enrollment.<sup>13</sup> Labor market outcomes right after college are generally similar, though, for first-generation students and their peers. First-generation college students are as likely to be employed, to be employed in similar fields, and to make comparable salaries as their peers during the first few years after college.<sup>14</sup> However, it is likely that gaps in income and occupational status could emerge in subsequent years given the lower rates of graduate school attendance among first-generation students.

To paraphrase Choy (2001), first-generation students' access to and success in higher education is related to their parents' educational level, but increasing postsecondary opportunity for these students by changing the level of their parents' education is not practical (although it would represent a novel approach to the problem). However, as she continues, we can examine how parents' level of education is related to other factors that we know affect whether and how

students successfully get into and through college, and in doing so, gain insights into how to help mitigate the effects of first-generation status as a risk factor for this population.<sup>15</sup>

## **Factors that Affect Access to College**

There are a number of factors that have been shown to negatively affect the college-going chances of students whose parents did not complete any education beyond high school, including lower levels of academic preparation, lower educational aspirations, less encouragement and support to attend college, particularly from parents, less knowledge about the college application process, and fewer resources to pay for college. In combination, these factors reduce the chances that first-generation students will “choose” to go to college at all as well as limit the types of colleges (i.e. location, sector, and selectivity) that first-generation students consider attending, which can ultimately affect their chances of graduating with a degree.

### **Academic Preparation for College**

Students whose parents did not go to college are considerably less likely to be prepared to gain admission to college than their peers whose parents have college experience. Among the 1992 high school graduates in NELS:88, nearly half of first-generation students were marginally or not qualified for admission to a four-year institution.<sup>16</sup> However, first-generation students are still less likely to enroll in college, even if they are academically qualified for admission. According to data from NELS:88, nearly 25 percent of academically qualified first-generation students did not enroll in any postsecondary institution (two- or four-year) within two years after high school compared to less than 5 percent of students whose parents had college degrees.<sup>17</sup> A rigorous high school curriculum, particularly one that includes advanced math, can greatly improve the chances that first-generation students will go to college. Horn and Nunez (2000) found that taking advanced math courses in high school more than doubles the chances that first-generation students will enroll in a four-year college, which narrows, although does not eliminate, the gap in college attendance with peers whose parents went to college.<sup>18</sup>

The rigor of high school courses taken by first-generation students is affected by a number of factors. According to Horn and Nunez (2000), first-generation students are much less likely than their peers to take eighth-grade algebra, a

“gateway course” to advanced high school math, even when they are qualified to take it. One of the factors affecting whether first-generation students take algebra is availability; more than one-fifth of first-generation students report that algebra was not offered by their school in eighth grade. Parental encouragement and involvement are also significant factors. Given the lack of experience with the college-going process in their families, it is not unexpected that first-generation students report that their parents are less likely to encourage them to take algebra in eighth grade as well as less likely to be involved in helping students choose their high school courses. However, as Horn and Nunez (2000) report, increased levels of parental involvement increase the likelihood that students will take a rigorous high school curriculum and the likelihood they will enroll in college, even after controlling for level of parental education. Therefore, as they suggest, it is possible that outreach to first-generation students and their parents with information about the importance of taking advanced coursework, especially in math, could improve the rates of college preparation and enrollment for this population.

### **Aspirations for College**

First-generation students have lower expectations about the highest level of education they will receive by as early as the eighth grade.<sup>19</sup> According to data from NELS:88, only one percent of eighth graders whose parents had college degrees said they did not expect to go to college compared to 16 percent of students whose parents had no college experience. By the twelfth grade, though, over 90 percent of all students, including those whose parents had not gone to college, expect to go to college. However, only about half (53 percent) of first-generation students expect to earn a bachelor’s degree compared to nearly 90 percent of students whose parents have earned a college degree. Other studies have also found that first-generation students tend to have lower degree aspirations than their peers.<sup>20</sup> Furthermore, first-generation students are less likely than their peers to plan to enroll in college immediately after high school, 68 percent to 91 percent respectively.<sup>21</sup> Delaying enrollment in postsecondary education not only reduces the chances that students will ever go to college, but also reduces their chances of persisting in college to graduation.<sup>22</sup>

Students’ aspirations for attending college are greatly affected by the amount of encouragement and support received from significant people in their lives, including teachers and counselors.<sup>23</sup> Research has shown that the level of encour-

agement to go to and prepare for college received from school staff is greater for students with higher levels of academic performance.<sup>24</sup> Given generally lower levels of academic achievement among first-generation students, it is likely that this population receives less encouragement and support from teachers and counselors to attend college.<sup>25</sup> However, it should be noted that even first-generation students who are academically qualified for admission to college are less likely to expect to enroll in postsecondary education and to earn a bachelor's degree.<sup>26</sup>

Encouragement and support from parents also greatly affects students' college-going plans. In fact, Hossler and his colleagues (1999) found that strong encouragement and support from parents is the most significant factor affecting whether students aspire to and enroll in college, regardless of parents' level of education. In the Hossler study, parental encouragement was defined as the frequency with which students talk to their parents about going to college while parental support was defined by the extent to which parents get involved in the college-going process from attending financial aid workshops to going on college visits to establishing a college savings account. Unfortunately, first-generation students tend to report receiving less such encouragement and support from their parents to go to and prepare for college than students whose parents have college degrees.<sup>27</sup> Some first-generation students also report being discouraged from attending college by family members.<sup>28</sup> The lower levels of parental encouragement and support reported by first-generation students are the result of a number of factors. The parents of first-generation students, many of whom are low-income, may expect their children to work after high school, rather than go to college, in order to contribute financially to the family.<sup>29</sup> Due to their own lack of experience with postsecondary education, these students' parents may not be aware of the social and economic benefits of college attendance<sup>30</sup>, and thus, may think that going to college is not important.<sup>31</sup> The parents of first-generation students may also lack pertinent information or have misperceptions about the college-going process, particularly about college costs and financial aid, which may lead them to discourage their children from pursuing postsecondary education.<sup>32</sup>

### **Planning for College**

According to Hossler et al (1999), "Parents who have gone to college are familiar with the experience and are better equipped to explain to their children how

the college system is structured, how it works, and how students can prepare for it.”<sup>33</sup> In the words of Bourdieu (1977) and Coleman (1988), students of college-educated parents have greater access to the forms of cultural and social capital that facilitate access to educational and economic opportunities in our society. Recent research has shown that first-generation students and their parents often lack important “college knowledge” about the process of preparing, applying, and paying for college due to the lack of experience with postsecondary education in their families.<sup>34</sup> For example, more than two-thirds of parents with no college experience could not estimate the cost of one year of college compared to only about one-fourth of parents with college degrees.<sup>35</sup> College knowledge is particularly low among economically disadvantaged, minority parents, especially Latino immigrants for whom language presents a significant barrier to acquiring it.<sup>36</sup> Lack of access to the internet—the now preferred medium by which colleges communicate with potential students and their parents and by which students apply for federal financial aid—also represents a major informational barrier for these populations.<sup>37</sup>

Parental involvement in the college planning process greatly increases students’ chances of going to college, regardless of parents’ level of education.<sup>38</sup> Given the lack of prior knowledge as well as access to information about college available to first-generation students and their families, it is not surprising that students from this population are more likely to report that they do not get help from their parents during the college planning and application process. According to Horn and Nunez (2000), students whose parents did not go to college are less likely to discuss preparation for college entrance examinations or their plans to go to college with their parents than students whose parents have college degrees. Parents without college degrees are also less likely to attend information sessions on college, seek out financial aid information, or go on college visits. It is cause for concern, however, that students whose parents did not go to college are no more likely to report receiving help with applying to college from their schools.<sup>39</sup> This is due in part to the fact that schools that serve large populations of first-generation students, many of whom come from low-income and minority backgrounds, do not have the resources (i.e. low student-counselor ratios) to perform well in that capacity.<sup>40</sup> Furthermore, parents with low levels of education, and concomitantly low income and occupational status, often cannot take advantage of the resources that schools do offer (i.e. parent-teacher conferences, college nights) due to demanding work sched-

ules.<sup>41</sup> Thus, the students and parents who are most in need of more college knowledge are the least likely to get it.<sup>42</sup>

Students whose parents did not go to college are, as a result, less likely to complete the necessary steps toward enrolling in college, especially a four-year institution, even if they are college-qualified and have aspirations to attend college.<sup>43</sup> Among qualified high school graduates, more than 20 percent of students whose parents had no college experience neither took a college entrance exam (i.e. ACT or SAT) nor applied to a four-year institution compared to only four percent of students whose parents had college degrees.<sup>44</sup> However, as Berkner and Chavez and others have found, the chances that students from disadvantaged backgrounds will take the necessary steps to apply to and eventually enroll in a four-year institution are considerably higher if they have received guidance on the college admissions process, particularly if they have received information about financial aid.<sup>45</sup>

### **Choosing College**

As the research here has shown, lower levels of educational aspirations, academic achievement, and support combine with the risks associated with first-generation status to reduce the chances that students whose parents did not go to college will themselves choose to go. First-generation status has also been shown to limit the types of colleges that students from this population consider choosing to attend in terms of location, sector, and selectivity. First-generation college students are much more likely to enroll in less selective two-year and four-year institutions, even when they are qualified for admission to more selective institutions.<sup>46</sup> This is due to a number of factors, primarily related to cost and location. Berkner and Chavez (1997) found that first-generation students and their parents were more likely to be very concerned about college costs and the availability of financial aid than their peers. According to Nunez and Cuccaro-Alamin (1998), first-generation students were more likely to cite obtaining financial aid, finishing in a short period of time, and being able to work while attending school as very important reasons for choosing their postsecondary institutions. They also found that first-generation students were more likely to choose institutions that were close to and allowed them to live at home.<sup>47</sup> While two-year institutions serve an important function, particularly with regards to improving access for disadvantaged populations,<sup>48</sup> these findings suggest that first-generation students may not be fully aware or able

to take advantage (i.e. pay) of the full range of options available to them.<sup>49</sup> In fact, Pratt and Skaggs (1989) found that first-generation students were more likely to have applied to only one institution.<sup>50</sup> Furthermore, the decision to attend a less selective two- and four-year college or university can have a negative effect on a student's chances of earning a degree, particularly a bachelor's degree, given lower graduation rates at these institutions even after controlling for entering student characteristics.<sup>51</sup> Therefore, it is not only of concern whether first-generation students go to college but where they go to college as well.

## **Factors that Affect Success in College**

While students whose parents have a college education tend to experience "college as a continuation" of their academic and social experiences in high school, going to college often constitutes a "disjunction" in the lives of first-generation students and their families. As a result, first-generation students have to make much more complex academic, social, and cultural transitions to college life, especially during the crucial first year.<sup>52</sup> According to Pascarella and his colleagues (2003), "being a first-generation student confers its greatest liability in [the] initial adjustment to, and survival in, postsecondary education."<sup>53</sup> Thus, whether and how first-generation students can navigate these transitions, particularly during their initial adjustment to college, has an effect on whether or not they can be successful in college and persist to graduation.

### **Academic and Social Integration**

First-generation college students tend to be less prepared academically when they enter college than their peers. Research has shown that they are less likely to take a rigorous high school curriculum, including Advanced Placement courses, and they generally have lower scores on college entrance examinations such as the SAT or ACT.<sup>54</sup> Terenzini and his colleagues (1996) found that first-generation students enter college with weaker cognitive skills in reading, math, and critical thinking. First-generation students also often lack important study and time management skills and they experience more difficulty navigating the bureaucratic aspects of academic life (i.e. registering for classes, meeting with advisors, choosing a major) due to the lack of college-going experience in their families.<sup>55</sup> Furthermore, first-generation students have less confidence in their abilities to succeed in college, even when they have the same level of high school preparation and achievement as their peers whose parents went to college.<sup>56</sup>

It should be noted, however, that first-generation students are still less likely to experience success in college, especially during the first year, even after controlling for prior academic preparation and performance.<sup>57</sup> First-generation students complete fewer credit hours and have lower grades; they are also more likely to withdraw from or repeat courses and to take remedial coursework even if they have the same level of preparation (i.e. rigor of high school curriculum and college entrance examination scores) as their peers.<sup>58</sup> Thus, as Tinto suggests (1993), the lower performance and persistence rates of first-generation students are more likely attributable to the experiences they have during college rather than the experiences they have before they enroll.

Recent research has shown that first-generation students are less likely to be engaged in the academic and social experiences associated with success in college, often referred to as academic and social integration in the literature.<sup>59</sup> In terms of academic integration, first-generation students spend less time studying and less time interacting with faculty (i.e. in advising sessions) and other students (i.e. in study groups) about academics both in and out of the classroom. They are also less likely to use student support services on campus.<sup>60</sup> In terms of social integration, first-generation students are less likely to socialize with faculty or students outside of class, less likely to develop close friendships with other students, and less likely to participate in extracurricular activities (i.e. academic or social clubs) on campus.<sup>61</sup> Terenzini and his colleagues (1994) found that first-generation students tend to delay participation in extracurricular activities and campus life until they feel they have “their academic lives under control.”<sup>62</sup> However, as recent research shows, first-generation students actually derive more benefit from their involvement in such activities, particularly those related to academics and that involve interactions with faculty members, than their peers.<sup>63</sup>

Lower levels of academic and social integration among first-generation students are due, in large part, to their demographic and enrollment characteristics or mode of college attendance.<sup>64</sup> As previously mentioned, first-generation students are more likely to live and work off-campus and to take classes part-time and discontinuously while working full-time.<sup>65</sup> First-generation students often spend little time on campus except when attending class, and they spend relatively little continuous time as students on a daily basis as they often schedule classes around their work schedules.<sup>66</sup> According to Billson and Terry (1982), first-generation students are more likely to identify with and to be integrated

into the world of work, they are more likely to put work over their studies when a conflict arises, and they are more likely to leave college before earning a degree to take a full-time job. The stress of attempting to balance the competing demands of working full-time and attending college is most acutely felt by adult first-generation students, many of whom are also married and/or have children.<sup>67</sup> Furthermore, Pascarella and his colleagues (2004) found that working while attending college has stronger negative implications for first-generation students in terms of postsecondary outcomes than for their peers.

The extent to which first-generation students must work while attending college is inextricably related to finances and financial aid. According to Cabrera, Nora, and Castaneda (1992), students' ability to pay greatly affects whether and how students interact with their college environment (as cited in Pascarella et al, 2004). Unmet financial need increases the work burden on students, which may limit their academic and social integration on campus as well as their persistence to degree. Recent research has found that increases in financial aid, particularly grants and work-study, increase the likelihood that first-generation students will persist in college, while increases in loan debt increase the likelihood that they will depart.<sup>68</sup> Unfortunately, stagnant funding for the federal Pell Grant and Work-Study programs and steady increases in tuition and fees across the country have decreased the purchasing power of grant aid in recent years. In 2003, the maximum Pell Grant award covered only 41 percent of the costs of attending a public, four-year institution, down from 77 percent in 1980.<sup>69</sup> The result is a considerable increase in the work and loan burden on all students, which puts first-generation students at particular risk.

### **Cultural Adaptation**

First-generation college students not only face barriers to their academic and social integration on campus, they also confront obstacles with respect to cultural adaptation.<sup>70</sup> As a number of research studies and personal accounts have shown, first-generation students often experience discontinuities between the culture (i.e. norms, values, expectations) of their families and communities and the culture that exists on college campuses, which they often describe as "worlds apart." The extent to which first-generation students can participate in and transition across these worlds, which can be aided or impeded by relationships at home and on campus, has a significant impact on whether they can be successful in college.<sup>71</sup>

For first-generation college students, going to college constitutes a major disjunction in family patterns, relationships, and life. They are, in effect, breaking rather than continuing family tradition by being the first in their families to attend college.<sup>72</sup> While the parents of first-generation students are often supportive of their decision to go to college, even making significant sacrifices to enable them to do so, the parents also often feel they cannot relate to their children after they go to college and vice versa.<sup>73</sup> Relatives may become critical of students' personal choices and decisions as they perceive them to be changing or separating from the family and/or not fulfilling their family responsibilities.<sup>74</sup> Relatives may also become unsupportive and may even discourage them from attending or completing college.<sup>75</sup> Relationships with friends who did not attend college may also become strained and difficult to maintain.<sup>76</sup> The pressures and conflicts in relationships with family and friends may cause intense feelings of isolation, estrangement, confusion, guilt, and anguish for first-generation college students.<sup>75</sup> The stress of these conflicts is often particularly acute for first-generation students from racial and ethnic minority backgrounds.<sup>78</sup>

According to Richardson and Skinner (1992), "first-generation students frequently describe their first exposure to campus as a shock that took them years to overcome."<sup>79</sup> First-generation students, particularly from racial and ethnic minority backgrounds, also often describe themselves as unprepared for the isolation and alienation they felt upon arriving on campus.<sup>80</sup> As other research has shown, first-generation college students are more likely to view the campus environment, particularly the faculty, as less supportive and less concerned about them.<sup>81</sup> First-generation students are also more likely to report having experienced discrimination on campus.<sup>82</sup> Thus, as Rendon (1992) describes from her own experience, first-generation students are often unable to fully participate in and benefit from the college experience due to the intense conflicts and problems "that arise from [living] simultaneously in two vastly different worlds while being fully accepted in neither."<sup>83</sup>

## **Interventions to Promote College Access and Success for First-Generation College Students**

There are a growing number of college access and success programs across the country that target low-income, minority, and first-generation students. Such programs are sponsored and supported by postsecondary institutions or systems like the CUNY College Now program; by states through programs like

Florida's College Reach Out Program; and by private foundations like the Gates Millennium Scholars Program.<sup>84</sup> However, the most well-known and long-standing are the federally-funded TRIO and GEAR UP programs.

The GEAR UP and TRIO programs form a continuum of support for economically and educationally disadvantaged students that extends from middle school through college.<sup>85</sup> Nationwide, more than 2,700 TRIO programs serve nearly one million low-income and first-generation students annually:

- The Talent Search and Upward Bound programs provide pre-college services that aim to increase college awareness and preparation among middle- and high-school students. Both programs offer counseling, tutoring, mentoring, and workshops to provide students with information about the college admissions process as well as to provide assistance with obtaining financial aid (i.e. help with filling out the FAFSA) and preparing for college entrance examinations. Upward Bound offers a more intensive program that includes supplemental academic instruction in key college-preparatory courses on Saturdays throughout the school year and during a six-week summer program held on a college campus. The Upward Bound program culminates in a bridge program that assists students with the transition from high school to college.<sup>86</sup>
- The GEAR UP program is a school-based intervention (whereas Talent Search and Upward Bound are student-centered interventions) that uses a cohort approach to deliver pre-college services similar to those offered by Talent Search to a group of students starting in middle school and continuing through their high school years. The GEAR UP program also offers scholarship aid to its participants. The program serves more than one million students per year.<sup>87</sup>
- The Student Support Services and the McNair Scholars programs serve low-income and first-generation students who are enrolled in college. Student Support Services provides services aimed at improving college persistence and graduation rates among this population, while the McNair program aims to prepare low-income and first-generation students for advanced graduate study at the doctoral level.<sup>88</sup>
- The Educational Opportunity Centers help out-of-school youth get back on the college track.<sup>89</sup>

Although there are a number of challenges to accurately evaluating the impact of outreach programs,<sup>90</sup> evaluation data from the TRIO programs has generally demonstrated a positive impact on the educational outcomes of low-income and first-generation students. Evaluation data has shown that students who participate in the Upward Bound and Talent Search programs go to college at much higher rates than other low-income and first-generation students, nearly 75 percent compared to about 40 percent respectively.<sup>91</sup> Evaluation data has also shown that students who participate in Student Support Services have higher grades, earn more credits, and have higher retention and graduation rates than other low-income and first-generation college students.<sup>92</sup> It should be noted, however, that despite the longevity and the demonstrated success of—as well as the considerable need for—these programs, the funding for the pre-college GEAR UP and TRIO programs (Upward Bound and Talent Search) has been targeted for elimination by the current administration in the annual budget for the last several years in a row. The funding has been restored in Congress each year due in large part to input from program directors and student alumni from across the country who have benefited greatly from their participation in these programs.

## Conclusions

There has been a sea change in the demographics of higher education as increasing numbers of female students, students of color, and students from low-income backgrounds have gone to college, many of whom are the first in their families to do so. Despite considerable gains in postsecondary access and participation among underrepresented populations, first-generation college students remain at a distinct disadvantage. This review of the research has identified a number of problems along the postsecondary pipeline that put first-generation students at risk for not going to and/or graduating from college. However, as the research suggests, there are possibilities for intervention at each of the pipeline leaks that can increase the chances that first-generation students will gain access to and be successful in college:

- **Improving pre-college preparation:** A rigorous high school curriculum, including advanced mathematics, can substantially narrow the gap in college attendance for first-generation students. First-generation students and their parents need more information and counseling about the “gateway courses” to college well before high school, especially since the “math track” to college starts with eighth grade algebra. First-generation students also need greater access to college-preparatory courses, which are often not offered at the schools they attend.<sup>93</sup>

- **Forming early aspirations and plans for college:** Parental involvement is the most important factor affecting students' aspirations and plans for college, regardless of parents' level of education, which suggests that early outreach to first-generation students and their parents with information about the importance of postsecondary education—as well as more accurate information on how to prepare, apply, and pay for it—could greatly improve the rates of college preparation and enrollment for this population.<sup>94</sup>
- **Increasing access to financial aid:** When, where, and how first-generation students, many of whom come from low-income backgrounds, attend college are all affected by inadequate financial aid and/or lack of information about how to obtain it. Delayed enrollment, initial enrollment in the two-year sector, part-time and discontinuous enrollment while working full-time, and living off-campus all reduce the likelihood that first-generation students will persist in college; first-generation students' mode of college attendance might be addressed by targeting additional aid to this population.<sup>95</sup>
- **Easing the transition to college:** First-generation students need considerable support as they make the complex academic, social, and cultural transitions to college. They need validation that they are not only capable of succeeding in college, but that they belong on campus as well.<sup>96</sup> Early support through bridge and orientation programs can socialize first-generation students to the expectations of the academic environment; involving parents also helps them to understand the demands of academic life.<sup>97</sup> Advising, tutoring, and mentoring by faculty and peers can help maintain needed support throughout the college years.<sup>98</sup> Participation in special programs for at-risk populations can “scale down” the college experience for first-generation students by providing them with personalized attention from staff and a place to connect with supportive peers who share common backgrounds and experiences.<sup>99</sup>
- **Increasing exposure to and engagement with the college environment:** Colleges and universities must remove the barriers (primarily financial) that prevent first-generation students from fully participating and engaging in the experiences that are associated with success in college (i.e. living on campus, involvement in extracurricular activities, interaction with faculty outside of class, use of available support services). Offering additional opportunities for work-study is one strategy that would increase the amount of time first-generation students spend on campus while meeting their financial needs. Focusing on increasing interaction and engagement in the

classroom is another strategy that makes use of, for some first-generation students, the only time they spend on campus.<sup>100</sup>

A number of these interventions are already incorporated in existing outreach programs, such as the federal GEAR UP and TRIO programs. However, as previously mentioned, financial support for these programs has been threatened in recent years. Furthermore, it is imperative that efforts to improve postsecondary access and success for first-generation students recognize and address the systemic nature of the underlying problems (i.e. inequalities in the K-12 system) related to postsecondary opportunity in order to generate viable solutions.<sup>101</sup>

## ENDNOTES

<sup>1</sup> College Board, 2004; Institute for Higher Education Policy, 2005.

<sup>2</sup> Lohfink and Paulsen, 2005.

<sup>3</sup> Berkner and Chavez, 1997; Bui, 2002; Chen, 2005; Choy, 2001; Horn and Nunez, 2000; Inman and Mayes, 1999; Lohfink and Paulsen, 2005; Nunez and Cuccaro-Alamin, 1998; Somers, Woodhouse, and Cofer, 2004; Terenzini, Springer, Yaeger, Pascarella, and Nora, 1996; Volle and Federico, 1997.

<sup>4</sup> Chen, 2005; Choy, 2001; Inman and Mayes, 1999; Lohfink and Paulsen, 2005; Nunez and Cuccaro-Alamin, 1998; Terenzini et al, 1996; Pascarella, Pierson, Wolniak, and Terenzini, 2003, 2004; Somers et al, 2004; Volle and Federico, 1997; Warburton, Bugarin, and Nunez, 2001.

<sup>5</sup> Berkner and Chavez, 1997; Chen, 2005; Choy, 2001; Horn and Nunez, 2000; Nunez and Cuccaro-Alamin, 1998; Warburton et al, 2001.

<sup>6</sup> Berkner and Chavez, 1997.

<sup>7</sup> Berkner and Chavez, 1997.

<sup>8</sup> Choy, 2001.

<sup>9</sup> Chen's study examines postsecondary enrollment and attainment as of the year 2000 for 1992 twelfth-graders from NELS:88 who entered college between 1992 and 2000.

<sup>10</sup> Chen, 2005.

<sup>11</sup> Berkner, He, and Cataldi, 2002; Choy, 2001; Horn and Nunez, 2000; Ishitani, 2003; Nunez and Cuccaro-Alamin, 1998; Warburton et al, 2001.

<sup>12</sup> Choy, 2001; Nunez and Cuccaro-Alamin, 1998.

- <sup>13</sup> Choy, 2001.
- <sup>14</sup> Choy, 2001; Nunez and Cuccaro-Alamin, 1998.
- <sup>15</sup> Choy, 2001, pg. 8.
- <sup>16</sup> Choy, 2001.
- <sup>17</sup> Berkner and Chavez, 1997.
- <sup>18</sup> see also Choy, 2001.
- <sup>19</sup> Choy, 2001.
- <sup>20</sup> Inman and Mayes, 1999; Terenzini et al, 1996; Volle and Federico, 1997.
- <sup>21</sup> Berkner and Chavez, 1997; Choy, 2001.
- <sup>22</sup> Berkner and Chavez, 1997; Nunez and Cuccaro-Alamin, 1998.
- <sup>23</sup> Hossler, Schmit, and Vesper, 1999.
- <sup>24</sup> Horn and Nunez, 2000; Hossler et al, 1999.
- <sup>25</sup> Terenzini et al, 1996 .
- <sup>26</sup> Berkner and Chavez, 1997.
- <sup>27</sup> Billson and Terry, 1982; Horn and Nunez, 2000; Terenzini et al, 1996; York-Anderson and Bowman, 1991.
- <sup>28</sup> London, 1989, 1992.
- <sup>29</sup> Volle and Federico, 1997.
- <sup>30</sup> Volle and Federico, 1997.
- <sup>31</sup> Pratt and Skaggs, 1989 as cited in McConnell, 2000.
- <sup>32</sup> Vargas, 2004.
- <sup>33</sup> Hossler, Schmit, and Vesper, 1999, pg 26.
- <sup>34</sup> Choy, 2001; Oliverez and Tierney, 2005; Tornatzky, Cutler, and Lee, 2002; Vargas, 2004.
- <sup>35</sup> Choy, 2001; National Center for Education Statistics NCES , 2002.
- <sup>36</sup> Tornatzky et al, 2002.
- <sup>37</sup> Vargas, 2004.
- <sup>38</sup> Horn and Nunez, 2000.

- <sup>39</sup> see also Choy, 2001.
- <sup>40</sup> McDonough, 1997; Vargas, 2004.
- <sup>41</sup> Tornatzky et al, 2002.
- <sup>42</sup> Vargas, 2004.
- <sup>43</sup> Berkner and Chavez, 1997; Choy, 2001; Volle and Federico, 1997.
- <sup>44</sup> Berkner and Chavez, 1997.
- <sup>45</sup> see also Vargas, 2004.
- <sup>46</sup> Berkner and Chavez, 1997; Pascarella et al, 2004.
- <sup>47</sup> see also Inman and Mayes, 1999; Lohfink and Paulsen, 2005.
- <sup>48</sup> Inman and Mayes, 1999.
- <sup>49</sup> Vargas, 2004.
- <sup>50</sup> as cited in McConnell, 2000.
- <sup>51</sup> Pascarella et al, 2004; Vargas, 2004.
- <sup>52</sup> Terenzini, Rendon, Upcraft, Millar, Allison, Gregg, and Jalomo, 1994.
- <sup>53</sup> Pascarella et al, 2004, pg. 429; see also Choy, 2001; Ishitani, 2003.
- <sup>54</sup> Chen, 2005; Lohfink and Paulson, 2005; Nunez and Cuccaro-Alamin, 1998; Warburton et al, 2001.
- <sup>55</sup> Richardson and Skinner, 1992.
- <sup>56</sup> Bui, 2002; Cruce, Kinzie, Williams, Morelon, and Xingming, 2005; Penrose, 2002.
- <sup>57</sup> Chen, 2005; Nunez and Cuccaro-Alamin, 1998; Warburton et al, 2001.
- <sup>58</sup> Chen, 2005; Pascarella et al, 2003, 2004; Terenzini et al, 1996; Warburton et al, 2001.
- <sup>59</sup> Pike and Kuh, 2005.
- <sup>60</sup> Nunez and Cuccaro-Alamin, 1998; Pascarella et al, 2003, 2004; Richardson and Skinner, 1992; Terenzini et al, 1996.
- <sup>61</sup> Billson and Terry, 1982; Lohfink and Paulsen, 2005; Nunez and Cuccaro-Alamin, 1998; Pascarella et al, 2003, 2004.
- <sup>62</sup> Terenzini et al, 1994, pg 64.

- <sup>63</sup> Filkins and Doyle, 2002; Lohfink and Paulsen, 2005; Pascarella et al, 2003, 2004; Terenzini et al, 1996
- <sup>64</sup> Richardson and Skinner, 1992.
- <sup>65</sup> Chen, 2005; Choy, 2001; Inman and Mayes, 1999; Lohfink and Paulsen, 2005; Nunez and Cuccaro-Alamin, 1998; Terenzini et al, 1996; Pascarella et al, 2003, 2004; Somers et al, 2004; Volle and Federico, 1997; Warburton et al, 2001.
- <sup>66</sup> Richardson and Skinner, 1992.
- <sup>67</sup> Zwerling, 1992.
- <sup>68</sup> Lohfink and Paulsen, 2005; Somers et al, 2004.
- <sup>69</sup> King, 2003.
- <sup>70</sup> Nunez and Cuccaro-Alamin, 1998.
- <sup>71</sup> Lara, 1992; London, 1989, 1992; Phelan, Davidson, and Yu, 1993; Piorkowski, 1983; Rendon, 1992; Rodriguez, 1982; Terenzini et al, 1994; Weis, 1985, 1992.
- <sup>72</sup> Terenzini et al, 1994.
- <sup>73</sup> London, 1989, 1992; Rosas and Hamrick, 2002.
- <sup>74</sup> London, 1989, 1992.
- <sup>75</sup> London, 1989, 1992; Terenzini et al, 1994, 1996.
- <sup>76</sup> Olenchak and Hebert, 2002; Terenzini et al, 1994, 1996.
- <sup>77</sup> Lara, 1992; London, 1989, 1992; Piorkowski, 1983; Rendon, 1992; Rodriguez, 1982.
- <sup>78</sup> Lara, 1992; Richardson and Skinner, 1992; Rendon, 1992; Rodriguez, 1982.
- <sup>79</sup> Richardson and Skinner, 1992, pg. 33.
- <sup>80</sup> Ibid.
- <sup>81</sup> Pike and Kuh, 2005; Terenzini et al, 1996.
- <sup>82</sup> Richardson and Skinner, 1992; Terenzini et al, 1996.
- <sup>83</sup> Rendon, 1992, pg. 56.
- <sup>84</sup> see Jones, 2003; Cunningham, Redmond, and Merisotis, 2003; Erisman and McSwain, 2006.
- <sup>85</sup> Gullatt and Jan, 2003.
- <sup>86</sup> Gullatt and Jan, 2003; U.S. Department of Education, 2002b, 2004.

- <sup>87</sup> Gullatt and Jan, 2003.
- <sup>88</sup> Gullatt and Jan, 2003; U.S. Department of Education, 1997, 2005a, 2005b.
- <sup>89</sup> U.S. Department of Education, 2002a.
- <sup>90</sup> Gullatt and Jan, 2003.
- <sup>91</sup> U.S. Department of Education, 2002b, 2004.
- <sup>92</sup> U.S. Department of Education, 1997, 2005b.
- <sup>93</sup> Choy, 2001; Horn and Nunez, 2000.
- <sup>94</sup> Hossler et al, 1999; Nunez and Cuccaro-Alamin, 1998; Vargas, 2004.
- <sup>95</sup> Vargas, 2004.
- <sup>96</sup> Rendon, 1992; Terenzini et al, 1994.
- <sup>97</sup> Richardson and Skinner, 1992; Terenzini et al, 1994.
- <sup>98</sup> Richardson and Skinner, 1992.
- <sup>99</sup> Richardson and Skinner, 1992.
- <sup>100</sup> Pascarella et al, 2004; Terenzini et al, 1996.
- <sup>101</sup> Gullatt and Jan, 2003.

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