



**Study of the Relationship Between Student Persistence,
Financial Assistance, and Expected Family Contribution**

**Maryland Public Two- and Four-Year Colleges and
Universities**

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Financial aid, especially assistance that reduces loan debt, is a critical component of efforts to ensure access and reduce financial barriers to postsecondary education, especially for students from low- and moderate-income backgrounds. Accordingly, the federal government, states and institutions have made considerable investments in financial support for needy students. Maryland undergraduates received nearly \$1.2 billion in financial aid in the form of grants, scholarships, loans and work study programs in 2004-2005. Funding for State financial aid programs more than doubled over the past 10 years, reaching \$93.8 million in FY 2006. While financial assistance has been a key factor in making it possible for students to enter college, it is important to learn whether aid recipients have been successful. Persistence rates are widely used, if somewhat controversial, measures of college outcomes.

Since the 1970s, researchers have examined the impact of financial aid in helping a student to stay in college. In general, the results have shown that financial aid has had at least some impact on persistence. Some of the earliest work (Astin, 1975) concluded that students who rely on scholarships and grants or who participate in work study programs increase their chances of graduating, while loans inhibited prospects. An analysis of studies through the late 1980s (Murdock, 1989) found that students receiving financial aid persisted at the same rates of those who did not. Since the goal of need-based financial assistance is to remove economic barriers to college success, these findings suggest that aid programs were having the desired effect by enabling low to middle income students to persist at levels equivalent to their more prosperous counterparts. A number of studies conducted during the 1990s (Cabrera, *et. al.*, 1993; St. John, *et. al.*, 1994; Somers and St. John, 1997) looked at the effects of federal and state grants, loans and college work study awards on student attrition. Scholars in the last decade have found a positive relationship between institutional financial aid and student retention (DesJardins, *et. al.*, 2002; Hossler, *et. al.*, 2006). Studies conducted by the Maryland Higher Education Commission suggest that Maryland aid programs have a positive impact on student persistence. A 2004 report found that, among the participants in Maryland's need based financial assistance program, the greatest retention, graduation and transfer rates were achieved by students who received the largest amount of money over the longest time.

Establishing linkages between financial aid and college persistence contributes to the justification for the substantial resources which government entities, institutions and private donors contribute to helping students in this manner. Particularly valuable would be information about the relationship between the type and amount of aid provided to students from differing income backgrounds and with varying degrees of unmet need. Interest has been expressed by the staff of the Maryland General Assembly in the persistence of students based on the financial aid packages they received and the economic means of their families.

This study will examine the second year retention rate of new full-time undergraduates at Maryland public two- and four-year colleges and universities *who had financial need on*

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the basis of the amount and type of financial assistance they received, their expected family contribution (EFC), and the amount of unmet need that they experienced. This is intended to provide a sense of how well students who receive different levels of financial aid in different EFC circumstances persist at a Maryland public college or university at least over the short term. As information from additional years is collected, it will be possible to examine the persistence rates of students on the basis of their financial aid packages over a longer horizon.

Methodology

Student records from the Commission's Financial Aid Information System for 2004-2005 were matched with those from the agency's Retention and Graduation Longitudinal Files for 2005-2006. An examination was made of the percentage of financial aid recipients with financial need who enrolled as new full-time undergraduates in fall 2004 at a Maryland community college or public four-year institution who returned for a second year of study in fall 2005. Part-time students who entered in fall 2004 and any students who matriculated in spring 2005 and were enrolled the previous fall were excluded from the analysis. The study examined the second-year retention rates of undergraduate aid recipients on the basis of:

- The amount of total non-loan aid received from public sources (state, federal and institutional) by undergraduates who had some financial need by EFC.
- The amount of total (loan and non-loan) aid received from public sources by undergraduates with need by EFC.
- The amount of State aid received by undergraduates with need by EFC. Separate analyses were conducted for students receiving need-based aid and all other forms of State financial assistance.
- The amount of institutional aid received by undergraduates with need by EFC.
- The amount of unmet need of undergraduates by EFC.

There are separate, sector-level analyses of students at community colleges and public four-year campuses. Students were categorized by ranges of EFC and amount of aid and amount of unmet need, and their retention rates were examined in terms of these groupings. It must be emphasized that the relationships between persistence and aid revealed in this study cannot be taken as evidence of causation. Other variables not included in the analysis could be responsible in part for the correlations that emerged.

Definitions

The following are definitions of terms that are used in this report:

Expected Family Contribution

EFC is a measure of the amount a student's family can reasonably be expected to spend in support of a college education. It is a calculation established by federal law that is determined by information provided on the Free Application for Federal Student Aid (FAFSA). Some of the factors used in the calculation include family income, available

assets, number of children in a family, and number attending college. Certain students with very low income qualify for an EFC of \$0. There is a strong correlation between EFC and a family's adjusted gross income. Because EFC accounts for more factors than income in a given year, it is considered to be a more accurate measure of a family's ability to pay for college and is thus used in this study.

EFC could not be calculated for 17 percent of the students at public two- and four-year institutions in 2004-2005 because these individuals did not complete the FAFSA. These students were excluded from the analysis. The absence of these individuals constitute a limitation of the study, since students who receive certain types of state aid (delegate scholarships, some special purpose programs, and critical shortage career-oriented aid) do not have to fill out the FAFSA. In addition, students missing EFC data in 2004-2005 represented 34 percent of the recipients of all institutional aid.

Financial Need

If the difference between a student's cost of college attendance and the federal expected family contribution is greater than zero, the aid applicant is deemed to have financial need. If the difference is less than or equal to zero, the aid applicant is deemed to have no financial need. The latter group of students was not included in this study.

Unmet need

A figure for unmet need was calculated for each individual student using a two-step process:

Step 1. (Cost of Attendance) less (Expected Family Contribution) less (Total Financial Aid Award) = Remaining Cost to Student

Step 2. If Remaining Cost to Student \leq 0, all need has been met.
If Remaining Cost to Student $>$ 0, the student has unmet need

Key Findings

At both public two- and four-year campuses, those students with financial need who received the largest amounts of financial aid regardless of the source consistently experienced the highest second year persistence rates. This pattern was especially and regularly pronounced for students with lower EFCs. Students at both the community colleges and public four-year institutions with the largest amounts of unmet need had the lowest retention rates. This was particularly evident among students in the lower EFC categories.

Analysis of Community College Aid Recipients

Tables 1 to 7 display the percentage of new full-time students at Maryland community colleges on the basis of their EFC and the amount of the different types of aid they received who: 1) returned for a second year of study at their community college or transferred to another two-year institution or to a four-year campus or 2) earned a lower division certificate or an associate degree during their first year. Also provided is the number of students in each of the EFC/aid ranges. Using Table 1 as an example, there

were 1,419 students with an EFC of \$0 who obtained more than \$3,000 in financial assistance. Three EFC categories were used: \$0, up to \$3,580, and more than \$3,850. No percentages were shown where cell sizes were below 15.

Table 1 presents the second year persistence rate of community college students with financial need who received *non loan* aid from the federal government, the state, or their institution. There was a large jump in the persistence rate of students who received more than \$3,000 in aid (75.5 percent) compared to those in the other categories: 55.7 percent of those who got less than \$700, 58.9 percent of those between \$700 and \$1,600, and 51.9 percent of those who obtained between \$1,601 and \$3,000. This pattern was evident for all EFC categories. The difference was especially great for students with an EFC of \$0; the retention rate for those whose aid was above \$3,000 was 72.9 percent compared to 23.1 percent for those who received between \$1,601 and \$3,000.

A similar result emerges for community college students whose financial aid packages included both loan and non loan assistance from the federal, state and institutional sources (Table 2). The highest second year retention rate (75.6 percent) was achieved by students who attained more than \$4,000 in aid. In comparison, the rates were 58.7 percent for those who received less than \$1,000, 55.0 percent for those who got between \$1,000 and \$1,999, and 61.0 percent for those who obtained \$2,000 to \$4,000. The increases in the retention rates across aid categories were pronounced only for students in the two lower EFC ranges.

The amount of aid students with an EFC of \$0 received in the form of federal Pell Grants appeared to have a considerable bearing on their second year retention rate (Table 3). More than three-quarters (75.4 percent) of the students in the lowest EFC range who had received more than \$3,100 in Pell Grants returned for a second year of study. Strikingly, fewer students with an EFC of \$0 who had received lesser Pell amounts re-enrolled: 26.6 percent for those who obtained between \$2,025 and \$3,100, 7.1 percent for those with \$1,012 to \$2,024, and none of those whose Pell amounts were under \$1,012. The second year retention rate also increased consistently for students with an EFC between \$1 and \$3,850 as the amount they received in Pell Grants rose; however, the increase was less dramatic than for students with an EFC of \$0.

Tables 4 and 5 look respectively at the retention rates of students who received need-based state financial assistance and all other types of state aid combined (merit, career and legislative scholarships). Students who received need-based state aid of \$600 or more had a greater second year retention rate than did those who attained less amounts. This pattern was especially evident for students in the lower two EFC ranges and, particularly, for those with an EFC of \$0. More than three quarters of the students with an EFC of \$0 who obtained \$600 or more in need-based aid returned for a second year of study – more than 20 percentage points above the persistence rates of students who received less in need-based state aid. The number of full-time community college students with other types of state financial assistance was relatively small, and the second year retention rates were high regardless of the amounts of aid received. Nonetheless,

those students whose aid was \$900 or above had slightly greater rates than did those who received less than \$900.

The greater the amount of institutional aid received by community college students, the higher their second year retention rate (Table 6). Of those students who obtained more than \$1,100 from their colleges, 82.2 percent returned for a second year of study. This compared to 67.5 percent of the students whose institutional aid was less than \$400, 76.5 percent of those who got between \$400 and \$599, and 79.3 percent of those who obtained between \$600 and \$1,100.

Table 7 examines the second year retention rate of community colleges students on the basis of the amount of unmet need they had. Students whose unmet need was \$7,000 or more had noticeably lower persistence rates than did their counterparts whose unmet need was less than \$7,000. This difference was especially great among students whose EFC was \$0; just slightly more than half of those whose unmet need was \$7,000 or more returned for a second year of study – considerably below the retention rates of students with an EFC of \$0 whose unmet need was less than \$7,000.

Analysis of Aid Recipients from Public Four-Year Colleges and Universities

Tables 8 to 14 present the percentage of new full-time students at Maryland public four-year campuses on the basis of their EFC and the amount of the different types of aid they received who re-enrolled for a second year of study at their institution or who transferred to another four-year college or university. The number of students in each of the EFC/aid ranges also was supplied. Four EFC categories were used: \$0, \$1 to \$3,850, \$3,851 to \$9,999, and \$10,000 or more. No percentages were displayed for cases of less than 15 students.

Table 8 shows the second year persistence rate of public four-year students with financial need who received *non loan* aid from the federal government, the state, or their institution. As the amount of aid received by these students increased, so did their retention rate. A large majority (89.6 percent) of the students whose non loan aid package exceeded \$8,000 returned for a second year of study, compared to 84.0 percent of those who received \$4,000 to \$8,000, 76.3 percent of those who obtained \$2,000 to \$3,999, and 74.1 percent of those who got less than \$2,000. The impact of aid appeared to be greatest for the neediest students. Of the students with an EFC of \$0, higher retention rates were achieved by those who aid amounts were greater than \$8,000 (87.6 percent) and between \$4,000 and \$8,000 (74.1 percent). In sharp contrast, less than half of the students with an EFC of \$0 who received less than \$4,000 in aid returned for a second year of study. A similar pattern emerged for students with an EFC up to \$3,850. The second year persistence rate of those who received more than \$8,000 in aid was 89.8 percent, compared to 83.2 percent for those who attained between \$4,000 and \$8,000, 70.8 percent for those who obtained \$2,000 to \$3,999, and 55.7 percent for those who aid package was less than \$2,000. There was considerably less difference between the retention rates of students in the higher EFC ranges based on the amount of aid they received.

There was a similar picture when taking into account both loan and non loan aid from the various sources (Table 9). The second year retention rate of students with need who received more than \$12,000 in financial assistance from the federal government, the state or their campus was 86.0 percent. In comparison, the persistence rate was 83.9 percent for students whose aid package was \$7,500 to \$12,000, 79.6 percent for those who obtained \$4,000 to \$7,499, and 74.3 percent for students who got less than \$4,000. Once again, the neediest students seemed to be affected the most by the amount of aid they received. For students with an EFC of \$0, retention rates rose as their aid package increased: 38.8 percent for those with less than \$4,000, 60.6 percent for those between \$4,000 and \$7,499, 76.9 percent for those who received between \$7,500 and \$12,000, and 85.3 percent for those whose financial assistance exceeded \$12,000. For students with an EFC of up to \$3,850, the persistence rate was 57.7 percent for those with less than \$4,000 in aid, 75.3 percent for those with \$4,000 to \$7,499, and more than 80 percent for those who obtained \$7,500 or more in aid. The differences between persistence and the amount of aid received was much less for students in the higher EFC ranges.

Of the public four-year students who received Pell Grants, those whose awards were \$2,500 or above tended to experience greater second year retention rates than did those who received less than \$2,500 (Table 10).

The second year persistence rates of students from public four-year campuses who received state need-based financial aid also increased with the amount of the award (Table 11). Of those students who received \$2,700 or more in need-based state aid, 89.8 percent returned for a second year of study compared to 85.3 percent of those who obtained between \$1,500 and \$2,699, and 57.9 percent of those who got less than \$1,500. The difference was especially striking for students in the lower EFC groupings. Students with an EFC of \$0 who received more than \$2,700 in need-based state aid had a second year persistence rate of 88.8 percent, compared to 47.5 percent for those who got less than \$1,500. Similarly, students with an EFC of up to \$3,850 who received \$2,700 or more in need-based state achieved an 89.1 percent persistence rate compared to 54.0 percent for those who were awarded less than \$1,500.

There was only slight differences between the second year retention rates of students and the amounts they received in other forms of state aid: merit, career, or legislative (Table 12). These types of aid are not dispensed on the basis of need.

The second year retention rates of students with need who received institutional financial aid from their public four-year campus also varied positively with the amount of the assistance (Table 13). Students who received more than \$3,500 in institutional aid persisted at a rate of 91.7 percent; this compared to 89.1 percent for those who were awarded between \$2,000 and \$3,500, 83.2 percent for those who attained between \$1,000 and \$1,999, and 71.3 percent for those who got less than \$1,000. Students from the lower EFC ranges benefited the most. Among students with an EFC of \$0, those who received more than \$3,500 experienced a second year retention rate of 87.3 percent compared to 53.3 percent for those who obtained under \$1,000. For students with an EFC of up to

\$3,850, the second year retention rate for those who received more than \$3,500 in institutional aid was 88.2 percent compared to 70.7 percent of those who got less than \$1,000.

Table 14 looks at the second year retention rate of new full-time students with unmet need on the basis of their EFC and the amount of their unmet need. Students with the greatest amount of unmet need (\$6,500 or more) experienced slightly lower persistence rates than did those whose unmet need was under \$6,500. However, the difference widened for students in the lower two EFC categories. For students with an EFC of \$0, those whose unmet need exceeded \$11,000 had a second year persistence rate of 59.6 percent compared to 85.1 percent for those individuals whose unmet need was less than \$3,000. For those students with an EFC of up to \$3,850, the second year retention rate of those with more than \$11,000 in unmet need was 70.1 percent compared to 84.4 percent for their counterparts who had less than \$3,000 in unmet need.

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TABLES

Table 1. Second Year Retention Rate of New Full-Time Community College Students with Need who Received Non-Loan Financial Aid from Federal, State or Institutional Sources (By Amount & Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$700		\$700-\$1,600		\$1,601-\$3,000		More than \$3,000	
	N	%	N	%	N	%	N	%
\$0	43	55.8%	62	40.3%	325	23.1%	1,419	72.9%
\$1-\$3,850	98	45.9%	331	51.7%	583	62.8%	830	78.8%
Over \$3,580	146	62.3%	157	81.5%	94	84.0%	44	95.5%
Total	287	55.7%	550	58.9%	1,002	51.9%	2,293	75.5%

Table 2. Second Year Retention Rate of New Full-Time Community College Students with Need who Received Loan and Non-Loan Financial Aid from Federal, State or Institutional Sources (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$1,000		\$1,000-\$1,999		\$2,000-\$4,000		More than \$4,000	
	N	%	N	%	N	%	N	%
\$0	66	54.5%	56	35.7%	465	31.8%	1,268	75.6%
\$1-3,850	130	48.5%	319	50.2%	892	70.7%	504	76.0%
Over \$3,850	136	70.6%	163	71.2%	300	77.0%	114	73.7%
Total	332	58.7%	538	55.0%	1,657	61.0%	1,886	75.6%

Table 3. Second Year Retention Rate of New Full-Time Community College Students with Need who Received Federal Pell Grants (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$1,012		\$1,012-\$2,024		\$2,025-\$3,100		More than \$3,100	
	N	%	N	%	N	%	N	%
\$0	26	0.0%	28	7.1%	398	26.6%	1,294	75.4%
\$1-3,850	300	55.7%	511	59.3%	488	69.9%	501	78.8%
Total	326	51.4%	539	56.6%	886	50.5%	1,796	76.4%

Table 4. Second Year Retention Rate of New Full-Time Community College Students who Received Need-Based State Financial Aid (By Amount of Aid and Exepcted Family Contribution)

EFC	Amount of Aid							
	Less than \$400		\$400-\$599		\$600-\$900		More than \$900	
	N	%	N	%	N	%	N	%
\$0	35	51.4%	95	55.7%	128	77.3%	158	77.2%
\$1-3,850	72	62.5%	161	73.9%	145	84.1%	133	77.4%
Over \$3,850	28	42.9%	43	81.4%	35	89.6%	16	62.5%
Total	135	55.6%	299	69.2%	308	81.8%	307	76.5%

Table 5. Second Year Retention Rate of New Full-Time Community College Students with Need who Received Other Types of State Financial Aid (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$500		\$500-899		\$900-\$1,500		More than \$1,500	
	N	%	N	%	N	%	N	%
\$0	12	*	13	*	13	*	6	*
\$1-3,850	18	77.8%	27	74.1%	18	83.3%	4	*
Over \$3,850	21	85.7%	24	83.3%	32	100.0%	10	*
Total	51	78.4%	64	78.1%	63	95.2%	20	85.0%

Table 6. Second Year Retention Rate of New Full-Time Community College Students with Need who Received Institutional Financial Aid (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$400		\$400-\$599		\$600-\$1,100		More than \$1,100	
	N	%	N	%	N	%	N	%
\$0	41	80.5%	66	75.8%	67	73.1%	101	80.2%
\$1-3,850	53	71.7%	88	78.4%	114	78.1%	122	82.1%
Over \$3,850	23	34.8%	46	73.9%	90	85.6%	108	83.3%
Total	117	67.5%	200	76.5%	271	79.3%	331	82.2%

Table 10. Second Year Retention Rate of New Full-Time Students at Public Four-year Campuses with Need who Received Federal Pell Grants (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$1,500		\$1,500-2,499		\$2,500-\$4,049		\$4,050	
	N	%	N	%	N	%	N	%
\$0	8	*	100	16.0%	38	65.8%	814	81.5%
\$1-\$3,850	429	74.8%	386	75.4%	729	85.1%	12	*
Total	437	73.6%	486	63.2%	767	84.2%	826	81.3%

Table 11. Second Year Retention Rate of New Full-Time Students at Public Four-year Campuses with Need who Received State Need-Based Financial Aid (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid					
	Less than \$1,500		\$1,500-2,699		\$2,700 or more	
	N	%	N	%	N	%
\$0	57	47.5%	65	80.0%	365	88.8%
\$1-\$3,850	76	54.0%	181	85.1%	645	89.1%
\$3,851-\$9,999	57	72.0%	120	90.0%	319	93.1%
\$10,000 or more	5	*	2	*	20	80.0%
Total	195	57.9%	368	85.3%	1,349	89.8%

Table 12. Second Year Retention Rate of New Full-Time Students at Public Four-year Campuses with Need who Received Other Types of State Financial Aid (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$800		\$800-\$1,299		\$1,300-\$3,000		More than \$3,000	
	N	%	N	%	N	%	N	%
\$0	32	87.5%	22	81.8%	23	91.3%	4	*
\$1-\$3,850	48	91.7%	43	88.3%	61	95.1%	16	93.8%
\$3,850-\$9,999	88	82.9%	127	92.9%	73	89.0%	26	96.2%
\$10,000 or more	72	91.7%	74	98.6%	62	93.5%	21	95.2%
Total	240	87.9%	266	92.9%	219	92.3%	67	95.5%

Table 13. Second Year Retention Rate of New Full-Time Students at Public Four-year Campuses with Need who Received Institutional Financial Aid (By Amount of Aid and Expected Family Contribution)

EFC	Amount of Aid							
	Less than \$1,000		\$1,000-\$1,999		\$2,000-\$3,500		More than \$3,500	
	N	%	N	%	N	%	N	%
\$0	45	53.3%	151	81.5%	134	85.8%	118	87.3%
\$1-\$3,850	116	70.7%	206	81.6%	291	87.0%	237	88.2%
\$3,850-\$9,999	76	76.4%	162	87.1%	268	90.3%	292	93.5%
\$10,000 or more	46	82.6%	82	82.9%	130	94.6%	219	95.4%
Total	283	71.3%	601	83.2%	823	89.1%	866	91.7%

Table 14. Second Year Retention Rate of New Full-Time Students at Public Four-year Campuses with Unmet Need By Amount of Unmet Need and Expected Family Income

EFC	Amount of Unmet Need							
	Less than \$3,000		\$3,000-\$6,499		\$6,500-\$11,000		More than \$11,000	
	N	%	N	%	N	%	N	%
\$0	201	85.1%	271	81.6%	277	66.8%	262	59.6%
\$1-\$3,850	328	84.4%	417	84.4%	398	74.9%	298	70.1%
\$3,850-\$9,999	264	83.3%	363	84.3%	259	80.7%	164	78.6%
\$10,000 or more	231	85.7%	169	89.4%	109	88.1%	65	89.2%
Total	1,024	84.6%	1,220	84.4%	1,043	75.5%	789	70.0%