MHEC
MARYLAND HIGHER EDUCATION COMMISSION

Report on Unmet Need and Student Success at Maryland Public Four-Year Institutions

December 2014

2014 JCR p. 135

MARYLAND HIGHER EDUCATION COMMISSION

6 North Liberty Street • Tenth Floor • Baltimore, MD 21201

The Maryland Higher Education Commission submits this report in response to the 2014 Joint Chairmen's Report, which requested an update to the 2013 MHEC report that examined impacts of financial need on student success. The charge included in the 2014 Joint Chairmen's Report was the following:

> "As part of the Access, Affordability, and Completion goal of the 2013 State Plan for Postsecondary Education, the State is to work toward breaking down financial barriers to higher education. MHEC has previously studied unmet student financial need and student persistence. The committees request that MHEC enhance the prior two reports by including loans in the analysis so that, if data is available, outcomes such as credit attainment, retention, and time to graduation can be compared to levels of financial need with and without loans for all students and for students who receive Pell grants."

Background

In 2013, in response to a request in the Joint Chairmen's Report, MHEC prepared a study regarding the impact of net cost of attendance (NCOA) on student persistence and completion when student family income is considered. NCOA is defined as the student's cost of attendance (including tuition and fees, room and board (on campus or off campus), books and supplies, and transportation), minus all financial aid (including grants, scholarships, loans, and other forms of aid) received from all sources (federal, state, institutional, and private). The study then calculated "need" by subtracting the student's estimated family contribution (EFC), which is calculated according to a standard federal formula, from the NCOA. Students were considered to have unmet need when their need was greater than zero, and overmet need when their need was less than zero.

The study considered students who enrolled as full-time, first-time students in a four-year public college or university in Fall 2010 after having graduated from high school within the previous 16 months, and who had applied for financial aid. Results from this study showed that unmet need was more prevalent among low-income students; approximately 80% of students receiving financial aid whose family income appeared within the lowest three income deciles (approximately $47,000 or less) had unmet need. For these students, more than 20% of their cost of attendance remained unmet. In addition, the study showed that low-income students were more price-sensitive than higher-income students, and that the size of NCOA had a statistically significant, negative effect on both persistence and four-year degree completion for students in the two lowest income quintiles.

The report also showed that students from different income deciles relied on different mixes of financial aid types to finance their postsecondary education. Across all income groups, students relied on loans to finance 25% to 38% of their cost of attendance. However, middle income students were found to have the highest loan burden, as loans accounted for 35% to 38% of their net cost of attendance. This may be because higher-income students have more available funds and do not require such loans, and because lower-income students have greater access to need-based scholarship funds that reduce their need to rely on loans. The present report considers the same group of students as the original study and compares the outcomes of students with and without loans to determine whether the type of aid had an effect on four-year graduation rates,[1] after accounting for family income and for unmet need.

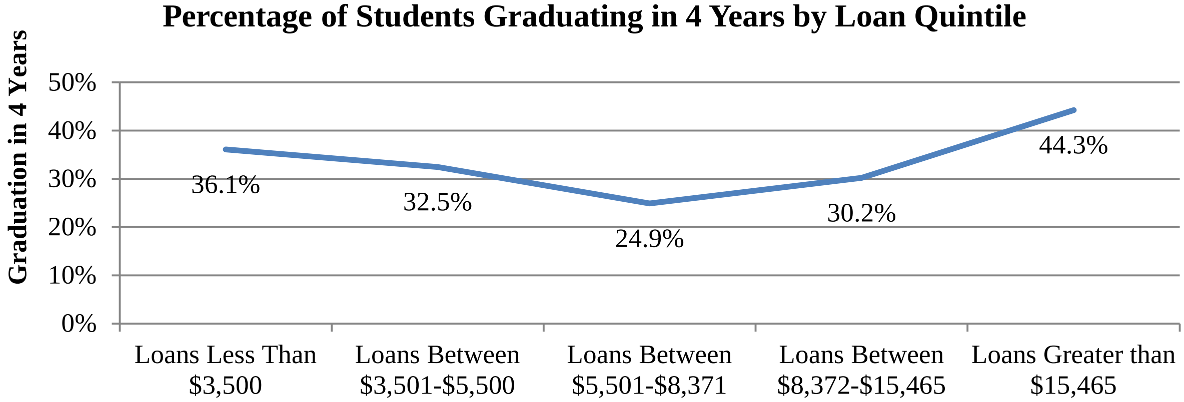
Analysis

This analysis begins by examining the relationship between loan amount and four-year graduation rate. Figure 1 below provides a descriptive look at graduation rates by amount of loans borrowed. Students who received loans were divided into quintiles based on the dollar amount borrowed, as follows.

- Lowest Quintile= Loan Amount ≤ $3,500
- Second Quintile= Loan Amount > $3,500 and ≤ $5,500
- Third Quintile= Loan Amount > $5,500 and ≤ $8,371
- Fourth Quintile= Loan Amount > $8,371 and ≤ $15,465
- Highest Quintile= Loan Amount > $15,465

Certain loan maximums compelled a slightly uneven distribution of borrowers. The maximum amount available through the subsidized Stafford loan is $3,500, and the three amounts most commonly borrowed through the unsubsidized Stafford loan program are $2,000, $3,500, and $5,000. This helps to explain the boundaries on the lowest quintiles, and why the third quintile is somewhat smaller than the others.

Figure 1.
Percentage of Students Graduating in 4 Years by Loan Quintile



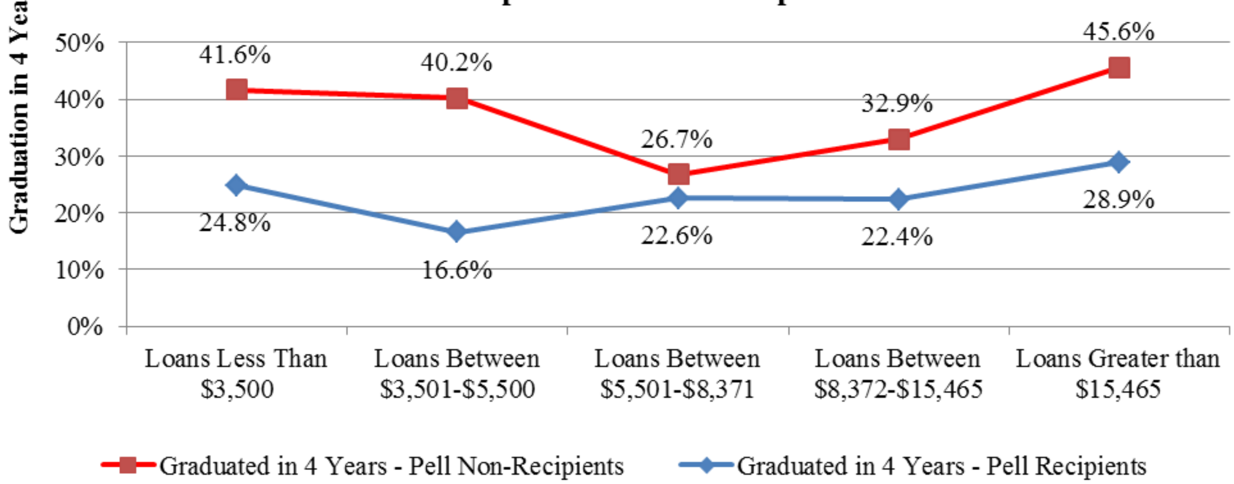
This figure indicates that there is no direct relationship between the dollar amount of student loans and graduation rates. When comparing graduation rates of students with loan amounts in

[1] Throughout this report, "graduation rate" refers to the four-year graduation rate. This should not be confused with the more commonly reported six-year graduation rate.

the lowest and highest quintiles, it appears that the more students borrow, the higher their graduation rates. In fact, for this sample the students with the highest graduation rate (44.3%) were those who borrowed the most money (more than $15,465). However, this trend is not prevalent across quintiles. Students with the lowest graduation rate in this population were those in the middle quintile (with loans between $5,501-$8,371), as only 24.9% of those students graduated with a degree in four years. This is more than ten percentage points lower (36.1%) than students who borrowed less than $3,500. Although there are fewer students in the third quintile (which may slightly distort these results), graduation rates of students in the second and fourth quintiles are similarly lower than the rates of students with loan amounts in the lowest and highest quintiles. Such findings suggest that loan amounts, by themselves, do not impact graduation rates.

This finding is further corroborated by distinguishing those students who receive Pell grants from those who do not. The Pell grant program is the principal federal need-based grant program, and is the largest single source of grant funds awarded in Maryland. In 2012-2013, students received $391.5 million in Pell grants, compared to $76.2 million in state grant funds and $29.0 million in other federal grant funds. Pell grants are awarded to the students with the greatest need. Figure 2 shows the graduation rate by loan quintile, as shown in Figure 1, for both Pell recipients and non-recipients.

Figure 2.
Percentage of Students Graduating in 4 Years by Loan Quintile, Pell Recipients and Non-Recipients



Although the graduation rate for Pell recipients is lower than that of non-recipients in each quintile, there is no direct relationship between the amount of borrowing and the graduation rate. For both Pell recipients and non-recipients alike, the most successful group is the group that borrowed the largest amount. This finding provides further support for the conclusion that loan amount by itself has little or no effect on graduation rates.

Another way to consider the issue is to examine the four-year graduation rates for student borrowers based on family income and level of unmet and overmet financial need. This kind of analysis provides a more detailed look at how loans are related to income and how they may affect students in different financial circumstances. For this analysis, both unmet need and family incomes were broken into equal parts: quartiles for unmet need and quintiles for family income.

Students were divided into quartiles according to their levels of need. Unmet need is represented as a positive dollar amount, while overmet need is represented as a negative amount.

- Lowest Quartile= ≤ -$12,872
- Second Quartile= > -$12,872 and ≤ $0
- Third Quartile= > $0 and ≤ $4,665
- Highest Quartile= > $4,665

Students were divided by family income into the following quintiles.

- Lowest Quintile = ≤ $30,626
- Second Quintile= > $30,626 and ≤ $62,542
- Third Quintile= > $62,542 and ≤ $101,850
- Fourth Quintile= > $101,850 and ≤ $148,978
- Highest Quintile= > $148,978

Table 1 on page 4 shows four-year graduation rates by income and by unmet or overmet need for students who took out loans, while Table 2 on page 5 shows the same data for students who did not take out loans. These tables confirms previous findings that unmet need is more prevalent among low-income students. Table 1 shows that, of the students with the highest level of unmet need (more than $4,665), 73.3% were in the bottom two family income quintiles (incomes below $62,542). By contrast, 85.8% of students with the highest level of overmet need (above $12,872), were in the highest two family income quintiles (more than $101,850). Furthermore, these numbers are consistent with data on students who did not take out loans, as demonstrated in table 2. Of those students without loans, the majority of students with high unmet need are in the bottom two income quintiles (76.3%) compared to students with high overmet need, as 92.9% of those students are in the top two income quintiles. For both students with and without loans, low-income students were overrepresented in the highest unmet need category.

Table 1: Graduation Rate of Students With Loans by Unmet and Overmet Need and Family Income											
		Total		Overmet Need of More Than $12,872		Overmet Need Between $0-$12,872		Unmet Need Between $1 and $4,665		Unmet Need of More Than $4,665	
		Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Family Incomes ≤ $30,626	**Did Not Graduate**	934	80.7%	18	100.0%	142	81.1%	406	79.8%	368	80.9%
	Graduated in 4 Years	223	19.3%	0	0.0%	33	18.9%	103	20.2%	87	19.1%
	Total	*1,157*	*100.0%*	*18*	*100.0%*	*175*	*100.0%*	*509*	*100.0%*	*455*	*100.0%*
Family Incomes > $30,626 *and* ≤ $62,542	**Did Not Graduate**	973	72.3%	17	70.8%	300	66.4%	341	74.9%	315	76.1%
	Graduated in 4 Years	372	27.7%	7	29.2%	152	33.6%	114	25.1%	99	23.9%
	Total	*1,345*	*100.0%*	*24*	*100.0%*	*452*	*100.0%*	*455*	*100.0%*	*414*	*100.0%*
Family Incomes > $62,542 *and* ≤ $101,850	**Did Not Graduate**	900	63.3%	134	63.8%	478	64.9%	171	62.0%	117	59.1%
	Graduated in 4 Years	521	36.7%	76	36.2%	259	35.1%	105	38.0%	81	40.9%
	Total	*1,421*	*100.0%*	*210*	*100.0%*	*737*	*100.0%*	*276*	*100.0%*	*198*	*100.0%*
Family Incomes > $101,850 *and* ≤ $148,978	**Did Not Graduate**	694	53.5%	372	54.7%	224	52.5%	51	50.5%	47	53.4%
	Graduated in 4 Years	602	46.5%	308	45.3%	203	47.5%	50	49.5%	41	46.6%
	Total	*1,296*	*100.0%*	*680*	*100.0%*	*427*	*100.0%*	*101*	*100.0%*	*88*	*100.0%*
Family Incomes > $148,978	**Did Not Graduate**	589	54.1%	463	55.1%	92	52.0%	16	41.0%	18	58.1%
	Graduated in 4 Years	499	45.9%	378	44.9%	85	48.0%	23	59.0%	13	41.9%
	Total	*1,088*	*100.0%*	*841*	*100.0%*	*177*	*100.0%*	*39*	*100.0%*	*31*	*100.0%*
Total	**Did Not Graduate**	**4,090**	**64.8%**	**1,004**	**56.6%**	**1,236**	**62.8%**	**985**	**71.4%**	**865**	**72.9%**
	Graduated in 4 Years	**2,217**	**35.2%**	**769**	**43.4%**	**732**	**37.2%**	**395**	**28.6%**	**321**	**27.1%**
	Total	***6,307***	***100.0%***	***1,773***	***100.0%***	***1,968***	***100.0%***	***1,380***	***100.0%***	***1,186***	***100.0%***

Table 2: Graduation Rate of Students Without Loans by Unmet and Overmet Need and Family Income											
		Total		**Overmet Need of More Than $12,872**		**Overmet Need Between $0-$12,872**		**Unmet Need Between $1 and $4,665**		**Unmet Need of More Than $4,665**	
		Count	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**	**Count**	**Percent**
Family Incomes ≤ $30,626	**Did Not Graduate**	475	73.1%	2	40.0%	50	56.8%	179	67.3%	244	83.8%
	Graduated in 4 Years	175	26.9%	3	60.0%	38	43.2%	87	32.7%	47	16.2%
	Total	*650*	*100.0%*	*5*	*100.0%*	*88*	*100.0%*	*266*	*100.0%*	*291*	*100.0%*
Family Incomes > $30,626 *and* ≤ $62,542	**Did Not Graduate**	301	64.6%	5	38.5%	35	47.9%	69	62.7%	192	71.1%
	Graduated in 4 Years	165	35.4%	8	61.5%	38	52.1%	41	37.3%	78	28.9%
	Total	*466*	*100.0%*	*13*	*100.0%*	*73*	*100.0%*	*110*	*100.0%*	*270*	*100.0%*
Family Incomes > $62,542 *and* ≤ $101,850	**Did Not Graduate**	179	45.7%	17	41.5%	56	39.4%	42	47.7%	64	52.9%
	Graduated in 4 Years	213	54.3%	24	58.5%	86	60.6%	46	52.3%	57	47.1%
	Total	*392*	*100.0%*	*41*	*100.0%*	*142*	*100.0%*	*88*	*100.0%*	*121*	*100.0%*
Family Incomes > $101,850 *and* ≤ $148,978	**Did Not Graduate**	187	36.2%	70	33.8%	78	37.3%	22	36.7%	17	41.5%
	Graduated in 4 Years	330	63.8%	137	66.2%	131	62.7%	38	63.3%	24	58.5%
	Total	*517*	*100.0%*	*207*	*100.0%*	*209*	*100.0%*	*60*	*100.0%*	*41*	*100.0%*
Family Incomes > $148,978	**Did Not Graduate**	222	30.6%	173	30.5%	40	31.5%	5	27.8%	4	33.3%
	Graduated in 4 Years	503	69.4%	395	69.5%	87	68.5%	13	72.2%	8	66.7%
	Total	*725*	*100.0%*	*568*	*100.0%*	*127*	*100.0%*	*18*	*100.0%*	*12*	*100.0%*
Total	**Did Not Graduate**	**1,364**	**49.6%**	**267**	**32.0%**	**259**	**40.5%**	**317**	**58.5%**	**521**	**70.9%**
	Graduated in 4 Years	**1,386**	**50.4%**	**567**	**68.0%**	**380**	**59.5%**	**225**	**41.5%**	**214**	**29.1%**
	Total	***2,750***	***100.0%***	***834***	***100.0%***	***639***	***100.0%***	***542***	***100.0%***	***735***	***100.0%***

Additionally, when looking at student outcomes of those with both loans and high unmet need the overall graduation rates are considerably lower than those with high overmet need. The graduation rate is 21.4% for students with loans in the two lowest income quintiles and the most unmet need, while the rate is 45.1% for those with loans and in the highest two income quintiles and the most overmet need. This relationship also exists among students without loans. The comparable figures are 28.7% for low-income high-unmet-need students and 68.7% for high-income high-overmet-need students. Such findings suggest that income disparities and high levels of unmet need have a greater impact on student success than student loans.

This hypothesis is further supported by a comparison of graduation rates among students with similar levels of need across income levels. Students with overmet need tend to have similar graduation rates regardless of income level. This is true for both students with loans and students without loans, although students without loans tend to graduate at higher rates. Students with unmet need, however, show significant differences in graduation rate by income level. Again, this suggests that income and unmet need have a stronger effect on completion than loans per se.

Yet another confirmation of this finding emerges from a comparison of graduation rates for students with loans and students without loans in the same income quintiles. In each quintile, the graduation rate for students without loans is higher than that for students with loans. However, the effect is considerably stronger for students in the higher income quintiles. Graduation rates for non-borrowers are about 8 percentage points higher than those of borrowers in the bottom two income quintiles. But the difference rises to 17 percentage points in the third and fourth quintiles and 24 percentage points in the highest quintile. High-income students, then, appear to be most strongly affected by the presence or absence of loans. Moreover, even low-income students without loans have a lower graduation rate than that of middle- and high-income students with loans. Thus loans, in and of themselves, have less of an impact on graduation rates than income and unmet need.

Finally, it appears that loans have a positive impact on graduation if the loan amount allows a student to move from having unmet need to having overmet need. Table 1 shows a significantly higher graduation rate for students with overmet need than students with undermet need. This result is not unexpected, and a similar effect appears in Table 2 for students without loans. But the positive effect of eliminating unmet need appears to be strongest for students in the lower income quintiles. This finding suggests that, for some students, borrowing enough to eliminate unmet need can have a positive effect on graduation.

Comparisons of students who are Pell recipients to students who are not Pell recipients shows that Pell recipients have lower overall graduation rates. However, the differences are smaller for those who have loans than those who do not. For students with loans, non-recipients have a graduation rate of 39.9%, while recipients have a graduation rate of 22.2%, a difference of 17.7 percentage points. For students without loans, non-recipients have a graduation rate of 59.6%, while recipients have a graduation rate of 29.3%, a difference of 30.3 percentage points. Perhaps more significantly, this effect is reversed among the lowest-income students. Pell recipients with family incomes in the first quintile actually have higher graduation rates than non-recipients. For students with loans, Pell recipients have a 22.2% graduation rate while non-recipients have a

15.6% graduation rate; for students without loans, Pell recipients have a 27.2% graduation rate while non-recipients have a 24.3% graduation rate. These data suggest that, especially for the students with the lowest income, Pell grants have a positive effect on completion for both borrowers and non-borrowers; moreover, low-income borrowers see a greater improvement in graduation rates than low-income non-borrowers.

Conclusion

The data in this report indicate that student four-year degree completion is more affected by family income and unmet need than whether students borrow funds for college, regardless of the amount of the loan. Students who borrowed more than $15,465 had the highest graduation rates (44.3%) and students who borrowed less than $3,500 had the second highest graduation rates (36.1%), while the students with loan amounts in the middle quintiles had the lowest graduation rates (24.9%). A similar random pattern appeared among those students who received Pell grants. This pattern suggests that loan amount, by itself, does not have a direct impact on graduation rates.

Furthermore, when comparing four-year graduation rates of low and high income students while accounting for unmet or overmet need, low-income students (with incomes below $62,000) with high unmet need had the lowest graduation rates (below 25% for students with loans and below 30% for those without loans). This contrasts with high-income students (with incomes above $101,850) who had high overmet need as their graduation rates were above 40% for those with loans and above 65% for those without.

In addition, students with overmet need showed little difference in graduation rates across income levels, while the disparities were significant for students with unmet need. This is true for both borrowers and non-borrowers, as well as for Pell recipients and non-recipients.

In summary, the present study extends the previous study by finding that:

- Family income and unmet need have a stronger effect on graduation rates than student loans.
- Loans, as a distinct form of financial aid, do not have a negative effect on completion.
- Loans appear to have a positive effect on graduation rates for those students who can use loan funds to eliminate their unmet need.