

6-19-2019

Changes in HBCU Financial Aid and Student Enrollment After the Tightening of PLUS Credit Standards

Matthew T. Johnson

Mathematica Policy Research, mjohnson@mathematica-mpr.com

Julie Bruch

Mathematica Policy Research, jbruch@mathematica-mpr.com

Brian Gill

Mathematica Policy Research, BGill@mathematica-mpr.com

Follow this and additional works at: <https://ir.library.louisville.edu/jsfa>

 Part of the [Higher Education Commons](#), and the [Higher Education Administration Commons](#)

Recommended Citation

Johnson, Matthew T.; Bruch, Julie; and Gill, Brian (2019) "Changes in HBCU Financial Aid and Student Enrollment After the Tightening of PLUS Credit Standards," *Journal of Student Financial Aid*: Vol. 48 : Iss. 2 , Article 4.

Available at: <https://ir.library.louisville.edu/jsfa/vol48/iss2/4>

This Research Article is brought to you for free and open access by ThinkIR: The University of Louisville's Institutional Repository. It has been accepted for inclusion in *Journal of Student Financial Aid* by an authorized administrator of ThinkIR: The University of Louisville's Institutional Repository. For more information, please contact thinkir@louisville.edu.

Changes in HBCU Financial Aid and Student Enrollment After the Tightening of PLUS Credit Standards

Cover Page Footnote

This research was funded by the Regional Education Laboratory (REL) Mid-Atlantic and completed in partnership with the REL Mid-Atlantic's HBCU College Completion Research Alliance. This article is based on results reported in Johnson, Bruch, & Gill (2015) and Johnson, Bruch, & Gill (2017). The authors would like to thank Neil Seftor for valuable comments and Brynn Hagen, Lisa McCusker, and Mickey McCauley for providing excellent programming support.

Changes in HBCU Financial Aid and Student Enrollment After the Tightening of PLUS Credit Standards

By Matthew T. Johnson, Julie Bruch, and Brian Gill

We analyze changes in financial aid and student enrollment at historically Black colleges and universities (HBCUs) that occurred after the U.S. Department of Education increased the credit history requirements necessary to obtain Parent Loans for Undergraduate Students (PLUS). We use institution-level data to examine financial aid and enrollment changes in the first two academic years affected by the new credit standards (2012-13 and 2013-14). The results show that PLUS loans declined substantially at HBCUs in 2012-13, and the decreases were not fully replaced by other types of federal financial aid. HBCUs also experienced larger declines in enrollment than other institutions – particularly for first-year students. Though PLUS loans increased somewhat in 2013-14 after the U.S. Department of Education streamlined the appeals process for PLUS denials, enrollment at HBCUs continued to decline.

Keywords: *financial aid, postsecondary education, historically Black colleges and universities (HBCUs), parental loans for undergraduate students (PLUS)*

The federal Parent Loans for Undergraduate Students (PLUS) program provides loans to parents of dependent undergraduate students to help pay for education expenses that other sources of financial aid do not cover. The PLUS program provides substantial financial aid. Approximately 12 percent of full-time dependent undergraduates have parents who have taken out PLUS loans, with each loan averaging almost \$15,000 a year (Radwin et al, 2018). In October 2011, to bring the lending standards in line with those of banks, the U.S. Department of Education increased the credit history standards necessary to obtain a PLUS loan.¹ In the first full academic year that the new credit standards were in effect (2012-13), the total dollar amount of federal PLUS loans approved for parents fell 11 percent (Anderson, 2013). Following the sharp drop in PLUS loans during the 2012-13 school year, the U.S. Department of Education streamlined the PLUS loan appeals process in the summer of 2013.

These changes to PLUS credit standards might have had especially large impacts on historically Black colleges and universities (HBCUs), which enroll large fractions of students from low-income and minority families. On average, HBCUs tend to have smaller endowments than other institutions (Gasman, 2013) and

Matthew T. Johnson is an Associate Director of Research at Mathematica Policy Research; Julie Bruch is a Senior Researcher at Mathematica Policy Research, and Brian Gill is a Senior Fellow at Mathematica Policy Research.

¹ The change to credit history requirements also affected Graduate PLUS loans. However, an analysis of graduate student financial aid and enrollment is beyond the scope of this research. In this paper the PLUS acronym will therefore only refer to loans made to parents of undergraduate students.

rely more heavily on tuition (Gasman, 2009). Therefore, a reduction in PLUS loans could have led to decreased enrollment in HBCUs that might threaten the viability of these institutions through reduced tuition revenue. This study seeks to measure and understand changes in enrollment and financial aid at HBCUs in the wake of tightened PLUS credit standards, with the expectation that the continuing policy debate about credit standards for the PLUS program and other higher education loan programs requires a careful and objective analysis of the data.

Change in PLUS Loan Credit Standards

Before 2011, PLUS applications were approved if the applicant had no bankruptcies, foreclosures, student loan defaults, tax liens, or wage garnishments during the preceding five years and was not more than 90 days delinquent on any debt (Nelson, 2012). The changes in credit standards introduced in 2011 were intended to bring the standards in line with those used by banks (Nelson, 2012). After the change, unpaid debts in collection and student loans written off as unpayable in the previous five years could also block the approval of PLUS loans (Doubleday, 2013). Because parents who wish to take out PLUS loans are required to reapply each year, these new credit standards applied to parents of both incoming first-year students and upper-class students.

PLUS loans, which had been increasing each year since 2008-09, declined following the 2011 changes in credit standards (Authors' calculations using data from the Federal Student Aid Office). The amount of money disbursed for PLUS loans more than doubled in real terms in the decade leading up to the 2012-13 school year (Wang, Supiano, & Fuller, 2012). Growth was not constant over the period, and there were some declines in the mid-2000s, but the drop in 2012-13 was substantially larger than in any other year during the preceding decade (Authors' calculations using data from the Federal Student Aid Office). After the change in PLUS loan credit standards, there was a 21-percentage point decline in the PLUS approval rate at United Negro College Fund member institutions (all of which are HBCUs) from 48 percent in 2011-12 to 27 percent in 2012-13 (United Negro College Fund, 2014).

Following the sharp drop in PLUS recipients during the 2012-13 school year, the U.S. Department of Education re-evaluated the change to the PLUS credit standards. The Department streamlined the process for appealing PLUS loan denial in the summer of 2013 by setting up a system that provided communications about the appeals process directly to applicants who were most likely to benefit from having their application reconsidered and allowing schools to track which families had received these notifications (O'Flaherty, 2013). Later, in October 2013, the Department announced rule changes to relax credit standards (Field, 2014). This change was implemented starting March of 2015 and came fully into effect for loans for the 2015-16 school year (O'Flaherty, 2015).

During 2013-14, after the Department streamlined the appeals process for PLUS loan denials, there was a decline in the post-appeals PLUS denial rate (Department of Education Rulemaking Committee Meeting, 2014). At public universities, the denial rate decreased from 41 percent in 2012-13 to 35 percent in 2013-14; at private universities, the denial rate decreased from 32 percent in 2012-13 to 27 percent in 2013-14 (Department of Education Rulemaking Committee Meeting, 2014). Streamlining of appeals may have been particularly helpful for HBCUs, as these universities experienced the largest declines in PLUS loans compared to other institutions.

Previous Literature

The 2011, tightening of standards was meant to “prevent people from taking on debt they may not be able to afford while protecting taxpayer dollars,” according to a spokesperson for the U.S. Department of Education (Wang et al., 2012). The change in PLUS credit standards could result in improved outcomes for

some parents if it induced students to find alternatives to PLUS loans to finance their education. Low-income parents are more likely to face large debt burdens, which could lead to default (Wang et al., 2012). A survey of PLUS borrowers showed that PLUS repayments make up 38 percent of monthly income for parents in the bottom decile of the income distribution (Wang et al., 2012). However, the change in PLUS credit standards could also result in negative outcomes if the reduced access to PLUS loans makes it more difficult for some students to attend college.

Studies have shown that inadequate financial support is related to attrition from higher education (Palmer, Davis, & Hilton, 2009) and that a significant positive relationship exists between parental income and assets and children's educational attainment, after controlling for student ability (Belley & Lochner, 2007; Huang, Guo, Kim, & Sherraden, 2010; Kinsler & Pavan, 2011; Olbrecht, Romano, & Teigen, 2016). Students' higher education decisions were found to be strongly related to monetary transfers from parents, including transfers from parental income and loans taken out by parents (Johnson, 2013; Keane & Wolpin, 2001; Winter, 2014). In general, students may be reluctant to take out large loans to finance higher education. In addition, increased parental contributions and tuition subsidies have been substantially more effective in raising educational attainment than is increasing student loan availability (Johnson, 2013). Therefore, although students became eligible for additional unsubsidized federal direct loans when their parents were denied PLUS loans, students may have chosen not to take out the additional loans and may instead have switched to part-time enrollment, increased paid work, transferred to lower-cost institutions, or dropped out of school.

HBCUs and Financial Aid

Until the mid-20th century, HBCUs enrolled more than 90 percent of the Black students at higher education institutions (Gasman, 2013). HBCUs currently enroll 11 percent of all Black students attending higher education institutions in the United States, but they represent less than 3 percent of colleges and universities (Gasman, 2013). Today, there are 100 HBCUs in the United States, approximately half public and half private; 89 percent are four-year institutions.² HBCUs tend to have lower tuition than other institutions. In 2011-12, the average in-state tuition and fees for students at public HBCUs amounted to \$6,000, compared to \$7,500 at other four-year public institutions. At private HBCUs, the average tuition and fees came to \$15,500, compared to \$27,500 at other private nonprofit institutions. The average out-of-pocket cost for students receiving any grant or scholarship aid at public HBCUs was \$9,500, compared to \$11,500 at other public institutions.³ At private HBCUs, the average out-of-pocket cost was \$17,000, compared to \$22,000 at other private institutions.

HBCUs predominantly serve students from minority and low-income families, who are more likely than students at other institutions to receive financial aid. At HBCUs, 85 percent of students are Black, compared to 10 percent at non-HBCU institutions. Seventy-two percent of students at HBCUs receive Pell Grants compared to 38 percent of students at other institutions. HBCUs also tend to serve a lower achieving student population; entering students at HBCUs have lower average SAT and ACT scores than students at other four-year institutions. Open enrollment admission policies are in effect at 23 percent of four-year HBCUs, compared to 12 percent of other institutions. HBCUs also have lower graduation rates than other institutions; the six-year bachelor's degree graduation rate at HBCUs is 33 percent, compared to 56 percent

² All numbers reported in this section without other citations are from authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

³ Average out-of-pocket cost is the average amount of federal, state, or local government, or institutional grant and scholarship aid subtracted from the total cost of attendance (including tuition, fees, books and supplies, room and board, and other expenses). The average tuition and fees and average out-of-pocket costs are calculated based on four-year nonprofit institutions in IPEDS and are weighted by undergraduate enrollment.

at other four-year institutions. However, the graduation rates of Black students at HBCUs do not differ from those of similar Black students at other institutions (Kim & Conrad, 2006; Montgomery & Montgomery, 2012; Richards & Awokoya, 2012).

In the decade preceding the tightening of PLUS credit standards, enrollment at HBCUs increased, but at a slower pace than at other institutions. Between the fall of 2001 and the fall of 2011 total enrollment at four-year HBCUs increased by an average of 0.8 percent per year, compared to an average increase of 2.5 percent per year at four-year non-profit institutions nationwide (Snyder & Dillow, 2013).

Changes to the financial aid landscape might have a particularly strong effect on students who attend HBCUs. Although tuition tends to be lower at HBCUs than at other comparable institutions, studies show that increases in tuition at HBCUs to compensate for declining state support have exacerbated difficulties in students' ability to pay (Palmer et al., 2009). Because Black students tend to come from lower-income families than White students, they may be more sensitive to financial aid in choosing a college and staying in college (St. John, Paulsen, & Carter, 2005). Prior research indicated that Black students are more likely to borrow than White students, and there is some evidence that they borrow more. Jackson and Reynolds (2013) found that 58 percent of Black students who enrolled for the first time in 1995-1996 took out federal loans within six years of enrolling in college, compared to 48 percent of White students. This study also found that the median amount borrowed was higher, regardless of degree attainment, for Black students than it was for white students. Using the same data, Kim (2007) reported that Black students who do not complete degrees borrow more than White students. Meanwhile, a report published by the National Center for Education Statistics (NCES) showed that while a larger percentage of Black students borrow loans than White students, the average amount borrowed across the two groups in 1999-2000 was very similar (NCES, 2004).

Research Questions

Two previous studies examined changes in PLUS loan amounts at HBCUs in the wake of tightened credit standards. Fishman (2014) compared changes in the number of recipients and PLUS dollar amounts at HBCUs relative to colleges in the for-profit, private nonprofit, and public sectors. United Negro College Fund (2014) presented statistics describing PLUS loan changes at all HBCUs and changes in enrollment only at United Negro College Fund member institutions.

This study extends previous analyses by examining PLUS loan and enrollment changes at HBCUs nationwide and comparing them to changes at other institutions serving students from predominantly low-income families. It is useful to compare HBCUs to these institutions, since students from low-income families may be more likely to be affected by changes in PLUS credit standards than students from higher-income families. This study also extends previous work by examining both the period immediately after the tightening of credit standards (2012-13) as well as the period following the subsequent streamlining of the appeals process (2013-14). In addition, this study contributes to the broader literature on the relationship between loan availability and students' higher education outcomes. Many studies have examined the effects of grant and student loan availability on higher education decisions (for example, Dynarski & Scott-Clayton, 2013; Hoxby, 2004; Kane, 2006). However, none have looked at how the availability of parental loans is related to higher education outcomes.

In this study we addressed the following research questions. After the change to PLUS loan credit standards in the fall of 2011 and the subsequent streamlining of the appeals process for PLUS denials in the summer of 2013:

1. How much did PLUS participation and PLUS loan amounts decline at HBCUs and other institutions of higher education?
2. At institutions that experienced a decline in PLUS loan amounts, is there evidence of a shift toward other forms of financial aid, such as federal direct loans, Perkins loans, and work-study programs?
3. How much did enrollment at HBCUs and other institutions of higher education change?

We examined part-time and full-time student enrollment and distinguished between new and continuing student enrollment.⁴ We also analyzed changes in minority student enrollment separately from changes in overall enrollment. Only four-year institutions were analyzed because the small number of two-year HBCUs precluded a separate analysis for those institutions.

Data and Methods

Data and Analytic Sample

In this study we used institution-level data from the Title IV Program Volume Reports (U.S. Department of Education, Federal Student Aid Office, 2015) and the Integrated Postsecondary Education Data System (IPEDS) (U.S. Department of Education, National Center for Education Statistics, 2015). The use of institution-level data limited the conclusions we could draw about individual student behaviors. We could not, for example, determine whether students whose parents were denied a PLUS loan found another source of financial aid, changed from full-time to part-time enrollment, or dropped out of college. However, an examination of total financial aid and enrollment at each institution can provide important insight into changes that occurred after the tightening of PLUS credit standards.

The Title IV Program Volume Reports, published by the U.S. Department of Education's Federal Student Aid Office, provide data on financial aid recipients and loan disbursements for all postsecondary institutions in the United States eligible for Title IV. These data cover financial assistance provided to students through the Federal Direct Loan Program (subsidized and unsubsidized loans), PLUS loans, campus-based Perkins Loans, and work-study aid. We used data from 2011-12 and 2013-14 to analyze changes in PLUS loans and other types of aid for undergraduate students in the wake of the modified credit standards. Data from 1999-2000 through 2010-11 were also used to examine historical trends in financial aid. We converted all dollar amounts in the study to real 2012 dollars using the Consumer Price Index from the Bureau of Labor Statistics.

We obtained data on enrollment and other institutional characteristics from IPEDS. The analytic sample for this study includes four-year nonprofit institutions that had IPEDS enrollment data and information on the fraction of students receiving Pell Grants in 2011-12. In addition, we excluded institutions that did not have any undergraduate students participating in the PLUS loan program in 2011-12, because these institutions are unlikely to have been affected by the change in PLUS credit standards. The study sample included 83 HBCUs and 1,559 non-HBCUs.

Table 1 presents descriptive statistics for three groups of institutions: HBCUs, other colleges and universities serving students from low-income families, and other colleges and universities serving students from higher income families. Institutions serving students from low-income families are defined as those with 64 percent or more of undergraduates receiving Pell Grants. The group of non-HBCUs serving students from higher income families represents all other four-year institutions in the sample (92 percent of

⁴ Full-time undergraduate students are defined as those who enroll for 12 or more credits per semester or quarter; part-time undergraduate students enroll for fewer than 12 credits per semester or quarter (U.S. Department of Education, National Center for Education Statistics, 2015).

all four-year institutions in the sample) and is designed to provide a broad picture of how financial aid and enrollments were changing over the study period.

Table 1

Characteristics of Four-Year Colleges and Universities in Analytic Sample (Percent Unless Otherwise Indicated)

Characteristic	Historically Black colleges and universities (HBCUs) ($n = 83$)	Non-HBCUs serving students from low-income families ($n = 129$)	Non-HBCUs serving students from higher-income families ($n = 1,430$)
Undergraduate enrollment (mean number)	2,792	4,298	5,879**
Undergraduate enrollment (median number)	2,145	1,658	2,526**
Students receiving Pell grants	71.9	72.4	35.5**
Black students	84.0**	20.3	8.9**
Hispanic students	1.9**	33.3	10.3**
Students age 25 or older	13.0**	31.3	14.7**
Foreign students	0.2	0.2	0.6**
Out-of-pocket cost of attendance (dollars)	11,687	10,918	15,298**
With open admission policy	22.9	34.1	9.1**
Public institutions	47.0**	27.1	33.8
Private institutions	53.0**	72.9	66.2

* Significant at $p < .05$; ** significant at $p < .01$

Note: Significance levels relate to difference relative to non-HBCUs serving students from low-income families. Data are from 2011-12 or the most recent year available.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015) and the Federal Student Aid Office (2015).

We chose the cutoff for classifying an institution as serving students from low-income families so that the percentage of students receiving Pell grants in HBCUs and non-HBCUs serving students from low-income families in 2011-12 was similar (the average level across institutions in each group was approximately 72 percent). We divided the sample in this way in order to provide information on a set of comparison institutions serving students with similar family incomes, because changes occurring after the tightening of PLUS credit standards may have differed across institutions serving students of different family income levels. It is important to note that HBCUs and non-HBCUs serving students from low-income families differed in racial and ethnic composition, with a higher percentage of Black students and a lower percentage of Hispanic students at HBCUs (Table 1). There was also a higher percentage of students age 25 or older at non-HBCUs serving students from low-income families relative to HBCUs. In addition there was a significantly larger proportion of HBCUs in the public sector than non-HBCUs serving students from low-income families. We used linear regressions of PLUS loan changes to account for these differences in student body composition, although some of the differences in racial and ethnic composition were substantial, which limits our ability to make comparisons between these groups of institutions. For example, 84 percent of students at HBCUs were Black, while only five non-HBCUs in the analytic sample had Black student populations greater than 82 percent.

Methods

We present descriptive statistics showing changes in PLUS dollar amounts and the number of PLUS recipients over the period 2011-12 to 2013-14, as well as historical trends in the number of recipients over the previous decade. We examined changes between 2011-12 and 2012-13, when the new credit standards for PLUS loans were first in place, as well as changes between 2012-13 and 2013-14, when the appeals process was streamlined. Statistical tests were conducted to determine if the changes at HBCUs were significantly different than at institutions in the comparison group which is made up of non-HBCUs serving students from low-income families. We also examined differences between non-HBCUs serving students from low-income families and those serving students from higher-income families.

We used linear regression models to further investigate whether the changes in PLUS loans at HBCUs in 2012-13 were associated with the characteristics of those institutions. We examined whether, after accounting for student and institution characteristics, HBCUs experienced disproportionate changes in PLUS loans relative to similar institutions in 2012-13. We first estimated the change in PLUS loan recipients at HBCUs between 2011-12 and 2012-13 without accounting for any institution-level characteristics (see equation 1, which corresponds to model 1 in Table 4).

$$(1) Y_i = \alpha + \beta(HBCU_i) + \varepsilon_i$$

The outcome variable, Y , is the percentage change in PLUS recipients between 2011-12 and 2012-13 at institution i . $HBCU$ is a binary indicator that equals 1 if institution i is an HBCU. β can be interpreted as the difference in the percentage change in PLUS recipients at HBCUs relative to other institutions.

Additional models accounted for institution-level characteristics. The primary estimation is shown in Equation 2 (which corresponds to model 2 in Table 4).

$$(2) Y_i = \alpha + \beta(HBCU_i) + \gamma_1(Pell_i) + \gamma_2(Black_i) + \gamma_3(Hispanic_i) + \gamma_4(Age_i) + \gamma_5(Foreign_i) + \varepsilon_i$$

In this specification, β can be interpreted as the difference in the percentage change in PLUS recipients at HBCUs relative to other institutions, holding constant other institution-level student characteristics (percentage of students who receive Pell grants and the percentage who are Black, Hispanic, 25 or older, and foreign). We included the percentage of students age 25 or older because these students are classified as independent, thus their parents are not eligible to take out PLUS loans. Therefore, institutions with more students age 25 or older were expected to have a smaller decrease in the percentage of PLUS recipients. A similar logic holds for the inclusion of the percentage of foreign students. Model 3 included both linear and quadratic transformations of the student characteristics variables in model 2 to account for potential non-linearities. Model 4 also included other institution characteristics: the out-of-pocket cost of attendance and the presence of open admission policies.

After examining changes in PLUS loans, we examined changes in other types of federal aid at the institutions that experienced PLUS loan decreases over the period 2011-12 to 2013-14. Families that were ruled ineligible for PLUS loans might have compensated for the loss by increasing other types of Title IV financial aid, such as Federal Direct Subsidized Loans, Federal Direct Unsubsidized Loans, campus-based Perkins Loans, and work-study aid. The rules of the Federal Direct Loan Program stated that students whose parents are denied PLUS loans were eligible for an additional \$4,000 to \$5,000 in direct unsubsidized loans. Therefore, students might have taken out additional direct loans in response to PLUS loan denials. Institutions might have also made additional Perkins loans available to students. Students could also have

been more likely to take work-study jobs if their parents were denied PLUS loans. Using Title IV data, we examined take-up of other types of federal aid, including direct subsidized and unsubsidized loans, Campus-based Perkins loans, and work study aid, between 2011-12 and 2013-14.

We then present descriptive statistics for changes in undergraduate enrollment that occurred between 2011-12 and 2013-14, as well as historical trends in enrollment over the previous decade. We calculated the changes separately for total, first-year, part-time, Black, and Hispanic enrollment. We also estimated a regression model similar to equation 1, with the percentage change in total undergraduate enrollment in 2012-13 as the dependent variable. We added a variable capturing the change in PLUS recipients as a percentage of 2011-12 enrollment to this regression to examine the extent to which the change in PLUS recipients could statistically account for changes in HBCU enrollment. We conclude the results section by discussing potential alternative explanations for the changes in enrollment at HBCUs that occurred during the study period.

Results

Changes in Financial Aid

In 2012-13, the first full academic year during which the modified credit standards for PLUS loans were in place, PLUS loans declined disproportionately at HBCUs. The number of PLUS loan recipients at HBCUs decreased 45.8 percent – by nearly 17,000 students – in 2012-13, significantly more than the 29.1 percent drop at non-HBCUs serving students from low-income families (Table 2, $p < 0.001$). This equates to an average of 203 fewer PLUS loan recipients at HBCUs in 2012-13 than in the previous year, compared with a loss of 30 recipients per institution at non-HBCUs serving students from low-income families (Table 2). Coinciding with the drop in the number of recipients, the total dollar amount of PLUS loans received by students at HBCUs also declined disproportionately compared to non-HBCUs serving students from low-income families. The number of PLUS recipients also decreased at non-HBCUs serving students from higher-income families, but by less than at those serving students from low-income families (14.3 percent, $p < 0.001$).

Table 2

Changes in PLUS Loan Recipients and Dollar Amounts at Four-Year Colleges and Universities Between 2011-12 and 2013-14

	Historically Black colleges and universities (HBCUs) ($n = 83$)	Change in average number of recipients per institution	Non-HBCUs serving students from low-income families ($n = 129$)	Change in average number of recipients per institution	Non-HBCUs serving students from higher income families ($n = 1,430$)	Change in average number of recipients per institution
<i>PLUS loan recipients</i>	Percentage change		Percentage change		Percentage change	
2011-12 to 2012-13 change	-45.8**	-203	-29.1	-30	-14.3**	-68

	Historically Black colleges and universities (HBCUs) (n = 83)		Non-HBCUs serving students from low-income families (n = 129)		Non-HBCUs serving students from higher income families (n = 1,430)	
2012-13 to 2013-14 change	12.4*	+30	5.3	+4	0.2	+1
Total 2011-12 to 2013-14 change	-39**	-173	-25.3	-26	-14.1**	-67
PLUS loan dollar amounts	Percentage change	Change in average amount per institution (thousands of dollars)	Percentage change	Change in average amount per institution (thousands of dollars)	Percentage change	Change in average amount per institution (thousands of dollars)
2011-12 to 2012-13 change	-36.4**	-1,975	-23.7	-204	-9.2**	-595
2012-13 to 2013-14 change	12.4	+428	10.8	+71	3.9	+227
Total 2011-12 to 2013-14 change	-28.5**	-1,547	-15.4	-133	-5.7**	-368

** significant at p < .01

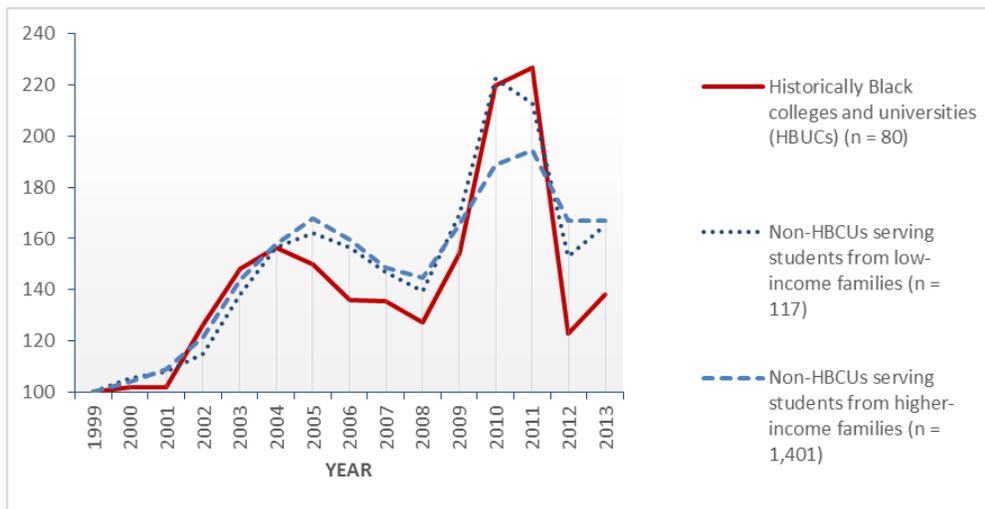
Note: Significance levels relate to differences in the average percentage change in enrollment relative to non-HBCUs serving students from low-income families.

Source: Authors' calculations based on data from the U.S. Department of Education, Federal Student Aid Office (2015).

The decline in PLUS loan recipients in 2012-13 is a departure from historical trends. Between 1999-2000 and 2011-12, PLUS loan recipients at HBCUs and non-HBCUs serving students from low-income families more than doubled. Although the number of PLUS loan recipients declined in both groups between 2006-07 and 2008-09, the drops were substantially smaller than the drop at HBCUs in 2012-13 (Figure 1).

Figure 1

Historical Changes in the Number of PLUS Loan Recipients
Index of PLUS loan recipients (100 = 1999)



Note: The year refers to the fall semester of each academic year. PLUS loan recipients for each institution group are normalized to equal 100 in the base year of 1999-2000. During this year the total number of PLUS recipients was 16,238 at HBCUs, 5,902 at non-HBCUs serving students from low-income families, and 348,276 at non-HBCUs serving students from higher-income families. To prevent the changes presented in this figure from being affected by the opening and closing of institutions, the sample includes only institutions that enrolled undergraduate students during all years between 1999-2000 and 2012-13. The magnitude of the changes may therefore differ from those displayed in Table 2, because fewer institutions are included in the sample.

Source: Authors' calculations based on data from the U.S. Department of Education, Federal Student Aid Office (2015).

As the aggregate number of PLUS recipients declined, so did the share of undergraduates receiving PLUS loans. In 2012-13 the share of undergraduates receiving PLUS loans dropped 6.7 percentage points (from 15.4 percent to 8.6 percent) at HBCUs, compared with less than 1 percentage point at non-HBCUs serving students from low-income families (Table 3).

Table 3

Changes in PLUS Loan Recipients as a Share of Undergraduate Enrollment at Four-Year Colleges and Universities Between 2011-12 and 2012-13

Variable	Historically Black colleges and universities (HBCUs) (n = 83)	Non-HBCUs serving students from low-income families (n = 129)	Non-HBCUs serving students from higher-income families (n = 1,430)
<i>Percentage of undergraduates receiving PLUS loans</i>			
In 2011-12	15.4	2.4	8.2
In 2012-13	8.6	1.7	6.9
In 2013-14	10.1	1.8	7.0
<i>Percentage point change in share receiving PLUS loans</i>			
Between 2011-12 and 2012-13	-6.7	-0.7	-1.2
Between 2012-13 and 2013-14 in share receiving PLUS loans	1.4	0.1	0.0

Source: Authors' calculations based on data from the U.S. Department of Education, Federal Student Aid Office (2015).

Multiple Linear Regression Analysis of Financial Aid Changes in 2012-13

The descriptive comparison of HBCUs with non-HBCUs serving students from low-income families (institutions in which at least 64 percent of students receive Pell Grants) was intended to restrict the sample to institutions serving students from families of similar income level. To investigate PLUS loan changes at HBCUs independent of observable student demographic characteristics, a multiple linear regression was conducted using the percentage change in PLUS recipients between 2011-12 and 2012-13 as the outcome variable, with baseline student demographic characteristics and institution characteristics as independent variables.

In analyses that do not account for student characteristics, HBCUs showed a significantly larger decline in PLUS loan recipients than non-HBCUs (model 1, Table 4). However, adding variables for student demographics changes the story. When including only linear controls for student characteristics, as in model 2, the coefficient on HBCUs actually becomes positive and statistically significant, indicating that HBCUs experienced a smaller change in PLUS loan recipients than other similar institutions. In model 3, when quadratic controls for the student characteristics are added, the difference between HBCUs and non-HBCUs was small and not statistically significant ($p = .47$) (see models 2 and 3, Table 4). In model 4, the addition of institution-level covariates does not affect the magnitude of the coefficient on HBCUs, but there is a positive statistically significant relationship between out-of-pocket costs and the percentage change in PLUS recipients, indicating that more expensive institutions had a smaller decrease in PLUS loan recipients.

Table 4

Regression of Percentage Change in PLUS Recipients at Four-Year Colleges Between 2011-12 and 2012-13 on Institution Characteristics

Variable	Model 1	Model 2	Model 3	Model 4
HBCU indicator	-31.14**	8.19**	-3.43	-3.17
Percentage of Pell grant recipients		-0.40**	-0.08	-0.06
Percentage of Pell grant recipients squared / 100			-0.36**	-0.38**
Percentage of Black students		-0.29**	-0.48**	-0.48**
Percentage of Black students squared / 100			0.38**	0.38**
Percentage of Hispanic students		0.21**	0.41**	0.40**
Percentage of Hispanic students squared / 100			-0.55**	-0.51**
Percentage of students age 25 or older		0.05*	-0.03	-0.002
Percentage of students age 25 or older squared / 1,000			0.02	0.01
Percentage of foreign students		-0.24	1.23	1.33
Percentage of foreign students squared / 100			-0.41*	-0.45*
Out-of-pocket cost of attendance				0.11**
Open admission policy				0.30
R ²	0.246	0.443	0.458	0.461

* Significant at $p < .05$; ** significant at $p < .01$.

Note: The sample in regression models 1–3 includes 1,642 four-year universities. The sample in model 4 includes 1,638 four-year universities. The coefficients are weighted by the number of undergraduate students enrolled in each institution in 2011-12.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015) and the Federal Student Aid Office (2015).

The larger declines at HBCUs can be statistically accounted for by the demographic student characteristics at these institutions, indicating that the students served by HBCUs may be more vulnerable to tightened credit standards than students at non-HBCUs. The findings suggest that the disproportionate decrease in the percentage of students receiving PLUS loans at HBCUs relative to other institutions serving students from low-income families may be a result of the high percentages of Black students enrolled in HBCUs. This result is consistent with findings from prior research that, on average, credit histories are less favorable among Black families than among White families and other minority groups, even after accounting for differences in family income. More than half of Black adults have credit scores in the lowest two deciles, compared with 16 percent of White adults and 30 percent of Hispanic adults (Board of Governors of the Federal Reserve System, 2007). Thus, it is likely that Black families were disproportionately affected by the tightening of credit standards for PLUS loans. However, this finding should be interpreted with caution, because there are very few non-HBCUs with Black student populations comparable to those of HBCUs. On average, Black students make up 10 percent of student enrollment at the non-HBCUs in the analytic sample and 84 percent at HBCUs. Only five non-HBCUs in the analytic sample have Black student populations greater than 82 percent, which is the 25th percentile among HBCUs in the sample.

Analysis of Financial Aid Changes in 2013-14

After a drop of nearly 17,000 PLUS recipients at HBCUs nationwide in 2012-13, there was a small uptick in 2013-14 of 2,490 recipients, following the change in the appeals process. On average, HBCUs gained 30 PLUS recipients per institution in 2013-14 (an aggregate increase of 12.4 percent across all HBCUs; see Table 2). This increase was significantly larger than that at non-HBCUs serving students from low-income families, which on average gained four PLUS recipients per institution in 2013-14 (an aggregate increase of 5.3 percent across all institutions). The uptick in 2013-14 did not compensate for the disproportionate losses in 2012-13 however. Over the two-year period, HBCUs experienced a net loss of 173 PLUS recipients per institution, compared to only 26 at non-HBCUs serving students from low-income families.

Take-up of other Types of Financial Aid in 2012-13 and 2013-14

At HBCUs where PLUS loan amounts decreased (79 of 83 HBCUs), the use of direct unsubsidized loans increased in 2012-13, but compensated for only about a tenth of the drop in PLUS loan amounts. Across all HBCUs in this sample, PLUS loans dropped \$164 million in 2012-13, while direct unsubsidized loans increased only \$15.7 million (Table 5). These HBCUs also experienced a small increase in campus-based Perkins loans and a decrease in direct subsidized loans and work-study aid.

Table 5

Aggregate Changes in Title IV Aid at Institutions That Experienced PLUS Declines in 2011-12 (Millions of Dollars)

	Historically Black colleges and universities (HBCUs) (n = 79)		Non-HBCUs serving students from low-income families (n = 102)		Non-HBCUs serving students from higher income families (n = 1,182)	
	2011-12 to 2012-13	2012-13 to 2013-14	2011-12 to 2012-13	2012-13 to 2013-14	2011-12 to 2012-13	2012-13 to 2013-14
PLUS loans	-164.0	35.5	-25.6	9.3	-922.5	242.1
Direct subsidized loans	-50.3	-41.9	-49.2	-62.9	-571.4	-498.1
Direct unsubsidized loans	15.7	-66.9	-53.1	-78.8	-449.2	-544.7
Campus-based Perkins Loans	1.2	3.1	1.0	1.5	27.3	119.8
Work-study aid	-0.7	-0.8	-2.3	-1.3	-22.6	-31.0

Source: Authors' calculations based on data from the U.S. Department of Education, Federal Student Aid Office (2015).

By comparison, non-HBCUs that saw a drop in PLUS loan amounts (1,284 of 1,559 institutions) experienced losses of both subsidized and unsubsidized direct loans and work-study aid, and modest increases in campus-based Perkins loans. The decrease in direct loan amounts is consistent with other research on changes in financial aid in 2012-13; Baum and Payea (2013) found that total borrowing from the federal direct loan program nationwide decreased by 7 percent in 2012-13.

We were unable to obtain institution-level data for this study on other types of non-Title IV financial assistance that could have been used to make up for the losses of PLUS loans in 2012-13. Data from the College Board's Annual Survey of Colleges provide some insights into aggregate trends in other sources of financial aid (College Board, 2014). The aggregate College Board data show that, although the disbursement of most types of federal grants and loans decreased in 2012-13, undergraduates used more institutional grants (up \$1.4 billion, or 4 percent), federal grants for veterans (up \$914 million, or 9 percent), and private loans (up \$650 million, or 12 percent) than they did in 2011-12 (Baum & Payea, 2013).

When PLUS loans at HBCUs increased in 2013-14, students borrowed less money through direct unsubsidized loans. While students at HBCUs borrowed \$35.5 million more through PLUS loans in 2013-14 than they had in the previous year, they borrowed \$66.9 million less through direct unsubsidized loans (Table 5). This is a reversal of the pattern observed in 2012-13, when PLUS loan amounts at HBCUs decreased substantially and direct unsubsidized loans increased, albeit modestly.

Changes in Undergraduate Enrollment

This section examines changes in enrollment at HBCUs and other institutions of higher education during 2012-13 and 2013-14. Enrollment changes may have occurred at the same time as PLUS loan changes because students may have chosen not to enroll in college after their parents were denied a PLUS loan. The analyses of enrollment changes were based on the same sample and the same comparison groups as the analyses of PLUS loan changes. In addition to overall changes in enrollment, we examined changes in part-time enrollment. When financial aid declines, students may switch from full-time to part-time status to reduce the cost of attendance and increase the amount of time they have available to work for pay. IPEDS does not allow for examination of the decisions of individual students, but total changes in part- and full-time enrollment can be examined at the institution level.

We also examined enrollment changes for three subgroups: students enrolling in college for the first time, Black students, and Hispanic students. First-time enrollment is important to examine because upper-class students may be more likely than first-year students to seek other sources of financial aid and remain enrolled if they are close to completing a degree. Entering students who would have enrolled in a four-year college might be more likely to switch to a lower-cost two-year institution or to postpone enrolling in college because they have not already invested time and money in a four-year college.

During 2012-13, the first year that more restrictive credit standards for PLUS loans were in effect, undergraduate enrollment declined at HBCUs and increased at non-HBCUs. At HBCUs, it dropped by 3.4 percent at four-year HBCUs, approximately equivalent to an average loss of 97 students per institution (Table 6). Meanwhile, enrollment rose by an average of 35 students at non-HBCUs serving students from low-income families and 45 students at non-HBCUs serving students from higher-income families.

Table 6

Changes in Total Undergraduate Enrollment at Four-Year Colleges by Institution Type, 2011-12 to 2013-14

	Historically Black colleges and universities (HBCUs) (n = 83)		Non-HBCUs serving students from low-income families (n = 129)		Non-HBCUs serving students from higher income families (n = 1,430)	
	Percentage change	Change in average number of students per institution	Percentage change	Change in average number of students per institution	Percentage change	Change in average number of students per institution
2011-12 to 2012-13 change	-3.4**	-97	0.8	35	0.8	45
2012-13 to 2013-14 change	-3.5**	-97	-0.1	-3	0.1	7
Total 2011-12 to 2013-14 change	-6.7**	-194	0.8	32	0.9	51

** significant at $p < .01$.

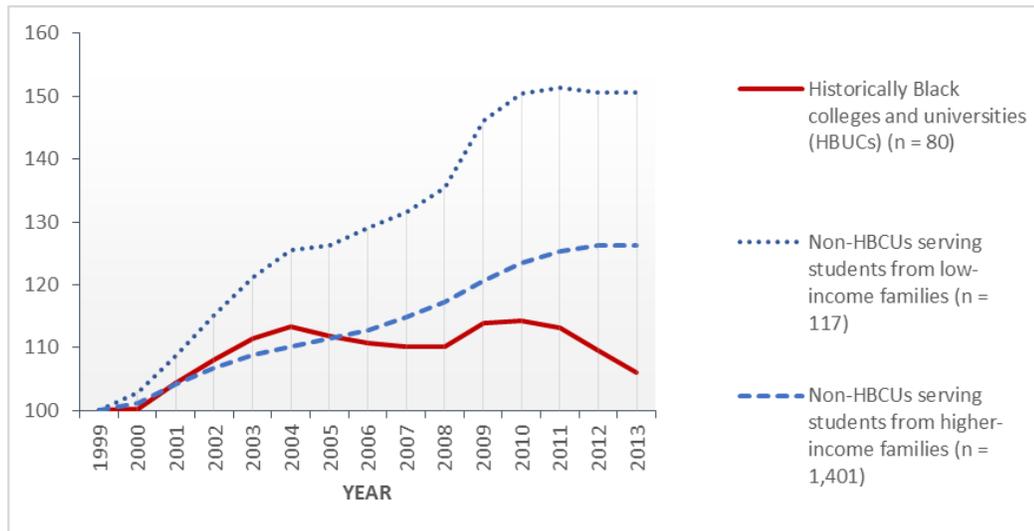
Note: Significance levels relate to differences in the average percentage change in enrollment relative to non-HBCUs serving students from low-income families.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

Total enrollment at HBCUs continued to decline in 2013-14, even though PLUS loan recipients and dollar amounts increased somewhat in that year (Figure 2, Table 6). Total enrollment at HBCUs decreased by 3.5 percent during the 2013-14 school year. This decrease was significantly larger than at other four-year institutions, where enrollment was relatively constant during 2013-14. Over the three-year period, 2011-12 and 2013-14, total enrollment at HBCUs declined by 6.7 percent, which is equivalent to a loss of 194 students on average per HBCU campus.

Figure 2

Historical Changes in Total Undergraduate Enrollment
Index of total undergraduate enrollment (100 = 1999)



Note: The year refers to the fall semester of each academic year. Total undergraduate enrollment for each institution group is normalized to equal 100 in the base year of 1999-2000. During this year the undergraduate enrollment was 208,362 at HBCUs, 341,886 at non-HBCUs serving students from low-income families, and 6,612,158 at non-HBCUs serving students from higher-income families. To prevent the changes presented in this figure from being affected by the opening and closing of institutions, the sample includes only institutions that enrolled undergraduate students during all years between 1999-2000 and 2012-13. The magnitude of the changes may therefore differ from those displayed in Table 6, because fewer institutions are included in the sample.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

Most of the change in enrollment at HBCUs was due to a drop in full-time student enrollment. HBCUs experienced a small drop in part-time enrollment during 2012-13 and a larger decline in 2013-14 (Table 7). On average, part-time enrollment decreased by 24 students per HBCU campus between 2011-12 and 2013-14. The percentage change in part-time enrollment at HBCUs was not significantly different from non-HBCUs serving students from low-income families.

Table 7

Changes in Part-Time Undergraduate Enrollment at Four-Year Colleges by Institution tType, 2011-12 to 2013-14.

	Historically Black colleges and universities (HBCUs) (n = 83)		Non-HBCUs serving students from low-income families (n = 129)		Non-HBCUs serving students from higher income families (n = 1,430)	
	Percentage change	Change in average number of students per institution	Percentage change	Change in average number of students per institution	Percentage change	Change in average number of students per institution
2011-12 to 2012-13 change	-1.2	-4	1.7	27	2.1	25
2012-13 to 2013-14 change	-5.5	-20	-1.9	-31	0.1	1
Total 2011-12 to 2013-14 change	-6.7	-24	-0.3	-4	2.2	25

Note: No differences in the average percentage change in enrollment relative to non-HBCUs serving students from low-income families are statistically significant.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

At HBCUs, first-time enrollment of degree-seeking students declined 6.4 percent in 2012-13, or almost twice as much as the decline in total undergraduate enrollment (Table 8). At other four-year institutions first-year enrollment declined as well, by 3.6 percent at non-HBCUs serving students from low-income families and by 0.2 percent at non-HBCUs serving students from higher-income families. This general decline in first-year enrollment at four-year institutions in 2012-13 is consistent with the enrollment numbers reported in Knapp, Kelly-Reid, and Ginder (2012) and Ginder and Kelly-Reid (2013). In 2013-14, first-year enrollment continued to decline at HBCUs, but at a slower rate than during 2012-13. This rate of decline was not significantly different than the decline at non-HBCU low-income schools. Though the rate slowed in 2013-14, the continued decline is noteworthy and has implications for future total enrollment at HBCUs. Even if first-year enrollment at HBCUs were to stabilize in subsequent years, total enrollment may continue to decline because each graduating class of students would be replaced by a cohort that was 8.6 percent smaller than it was in 2011-12.

Table 8

Changes in First-Year Undergraduate Enrollment at Four-Year Colleges by Institution Type, 2011-12 to 2013-14

	Historically Black colleges and universities (HBCUs) (n = 83)	Change in average number of students per institution	Non-HBCUs serving students from low-income families (n = 129)	Change in average number of students per institution	Non-HBCUs serving students from higher income families (n = 1,430)	Change in average number of students per institution
	Percentage change		Percentage change		Percentage change	
2011-12 to 2012-13 change	-6.4	-38	-3.6	-24	-0.2**	-2
2012-13 to 2013-14 change	-2.4	-13	-1.3	-9	0.6	6
Total 2011-12 to 2013-14 change	-8.6	-52	-4.9	-33	0.4**	4

** significant at $p < .01$.

Note: Significance levels relate to differences in the average percentage change in enrollment relative to non-HBCUs serving students from low-income families.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

We also analyzed the change in total undergraduate enrollment separately for Black and Hispanic students. In the period prior to the study years (2005-06 to 2011-12), Black and Hispanic enrollment had increased, with Hispanic enrollment increasing at a faster pace (National Center for Education Statistics 2017). However, undergraduate enrollment for Black students declined nationwide at 4-year colleges during both 2012-13 and 2013-14 (Table 9). At HBCUs, Black undergraduate enrollment declined by a total of 8.5 percent between 2011-12 and 2013-14, which was a significantly higher rate of decline than at other 4-year institutions. On average Black undergraduate enrollment at HBCUs declined by 210 students per institution, which is larger than the decline in total undergraduate enrollment at HBCUs of 194 students, indicating that the enrollment of students from other racial/ethnic groups increased.

Table 9

Changes in Total Black Undergraduate Enrollment at Four-Year Colleges by Institution Type, 2011-12 to 2013-14

	Historically Black colleges and universities (HBCUs) (n = 83)	Change in average number of students per institution	Non-HBCUs serving students from low-income families (n = 129)	Change in average number of students per institution	Non-HBCUs serving students from higher income families (n = 1,430)	Change in average number of students per institution
	Percentage change		Percentage change		Percentage change	
2011-12 to 2012-13 change	-4.9*	-120	-1.5	-13	-0.6	-3
2012-13 to 2013-14 change	-3.9	-90	-1.4	-12	-1.2	-6
Total 2011-12 to 2013-14 change	-8.5*	-210	-2.9	-25	-1.8	-9

* significant at $p < .05$.

Note: Significance levels relate to differences in the average percentage change in enrollment relative to non-HBCUs serving students from low-income families.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

Enrollment of Hispanic undergraduate students increased substantially at four-year institutions in both 2012-13 and 2013-14 (Table 10). This pattern is consistent with a trend of sharply rising Hispanic college enrollment over the past decade (Fry & Lopez, 2012; Fry & Taylor, 2013). At HBCUs, the percentage increase in Hispanic enrollment between 2011-12 and 2013-14 was 28.7, which was a significantly higher rate than at non-HBCUs serving students from low-income families. However, because Hispanic students make up a small fraction of enrollment at HBCUs, the increase averaged only 13 students per institution.

Table 10

Changes in Total Hispanic Undergraduate Enrollment at Four-Year Colleges by Institution Type, 2011-12 to 2013-14

	Historically Black colleges and universities (HBCUs) (n = 83)	Non-HBCUs serving students from low-income families (n = 129)	Non-HBCUs serving students from higher income families (n = 1,430)			
	Percentage change	Change in average number of students per institution	Percentage change	Change in average number of students per institution	Percentage change	Change in average number of students per institution
2011-12 to 2012-13 change	19.6**	9	2.8	39	7.8**	44
2012-13 to 2013-14 change	7.6	4	2.2	32	6.8**	41
Total 2011-12 to 2013-14 change	28.7**	13	5.1	72	15.2**	85

** significant at $p < .01$.

Note: Significance levels relate to differences in the average percentage change in enrollment relative to non-HBCUs serving students from low-income families.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

Factors Related to the Decline in HBCU Enrollment

We used a regression model to investigate whether the decline in HBCU in 2012-13 was related to the decrease in the number of PLUS recipients during that year. We first regressed the percentage change in total undergraduate enrollment on an HBCU indicator to show that HBCUs on average experienced a decrease in enrollment that was 4.1 percentage points greater than that of other institutions (Table 11, model 1). We then added a variable capturing the change in PLUS recipients at each school as a percentage of 2011-12 enrollment (Table 11, model 2). After accounting for decreases in PLUS recipients, the difference in enrollment changes between HBCUs and other institutions fell to 0.7 percentage points and was no longer statistically significant. This indicates that the disproportionate decrease in enrollment at HBCUs in 2012-13 can be accounted for (statistically) by the decline in PLUS recipients.

Table 11

Regression of Percentage Change in Total Undergraduate Enrollment at Four-Year Colleges Between 2011-12 and 2012-13 on Change in PLUS Recipients

Variable	Model 1	Model 2
HBCU indicator	-4.1**	-0.7
Change in PLUS recipients as percentage of 2011-12 enrollment		0.6**
R2	0.01	0.04

** significant at $p < .01$.

Note: The sample includes 1,642 four-year universities. The coefficients are weighted by the number of undergraduate students enrolled in each institution in 2011-12.

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015) and the Federal Student Aid Office (2015).

It is possible that the decrease in PLUS loan availability caused part of the decline in HBCU enrollment, though there are a number of other factors that may have been related to the enrollment declines. For example, there was a change to the Pell Grant program in 2012 that affected the maximum number of years for which students could receive Pell grants and the dollar amount of grants available (Ochoa, 2012). It is possible that some of the decline in total undergraduate enrollment at HBCUs was related to these Pell Grant program changes, though it is unlikely that these changes had a substantial impact on first-year HBCU enrollment. See appendix A for details.

The decline in HBCU enrollment could also be related to a trend that was occurring before the change to PLUS credit standards. During the decade preceding the change in PLUS credit standards, enrollment at HBCUs had increased at a slower pace than enrollment at four-year nonprofit institutions nationwide (Figure 2). Between the fall of 2010 and the fall of 2011, enrollment at HBCUs fell 0.7 percent, whereas enrollment at four-year nonprofit institutions nationwide, though slowing, increased 1.6 percent (Figure 2; Snyder & Dillow, 2013). Improving economic conditions and changes in housing values could also have affected enrollment. Undergraduate enrollment tends to be countercyclical, implying that enrollment will fall during good economic times and rise during bad times (Betts & McFarland, 1995; Christian, 2007; Dellas & Koubi, 2003; Kienzl, Alfonso, & Melguizo, 2007). In addition, changes in family wealth related to housing values can be linked to application and enrollment behavior, with students applying to a greater number and higher quality institutions when their families' housing values have recently increased (Lovenheim, 2011; Lovenheim & Reynolds, 2013).

In Johnson, Bruch, and Gill (2015) we used a regression model to show that HBCUs experienced a disproportionate decline in enrollment in 2012-13 even after accounting for institution-specific controls for prior trends in enrollment, state-level unemployment rates, and state-level housing prices. These results should be interpreted with caution, however, because the coefficient estimates incorporated substantial statistical noise due in part to the variability inherent in institution-specific enrollment trends. We also showed that, after accounting for prior enrollment trends, unemployment rates, and housing prices, HBCUs with larger declines in PLUS recipients experienced greater enrollment declines. However, the fact that HBCU enrollment continued to decrease in 2013-14, even though the number of PLUS loan recipients increased during that year, may indicate that factors unrelated to PLUS changes contributed to the decline in HBCU enrollment.

Discussion

This study provides previously undocumented information on changes in enrollment and federal financial aid at HBCUs and other institutions of higher education in the wake of changes to PLUS credit standards. During 2012-13, PLUS participation decreased at institutions serving low-income students across the country, with disproportionately large declines at HBCUs. Other types of federal financial aid did not fully make up for the loss of PLUS loans during that year. This indicates that various types of federal financial aid – some offered to students and some to parents, some subsidized and some unsubsidized – may not be interchangeable. A cut to one of these programs may result in students receiving less total federal financial aid rather than a shift to other types of federal financial aid. This may in part be driven by varying limits placed on different federal aid programs, with higher maximums for PLUS loans than other types of aid.

The finding that HBCUs experienced the largest increase in PLUS loan recipients in 2013-14 – following the appeals process change – is in line with their experiencing the largest decrease in the previous year. Students at institutions that experienced the largest losses in PLUS recipients after the credit standards change may have been most affected by the streamlined appeals process.

Enrollment at HBCUs also declined during the first year after the tightening of PLUS credit standards. These enrollment declines were largest among first-year undergraduates and black students. Though this study was not designed to support strong causal inferences, it is possible that the tighter PLUS credit standards caused some of the decline in enrollment. Students who are denied PLUS loans do not always substitute the lost PLUS loan dollars with other types of financial aid, and some may choose not to enroll in college at all – particularly first-time students who have not made any previous investments in postsecondary education. Black students may also have been more strongly affected by the change to the PLUS credit standards, given that black families tend to have less favorable credit histories than white families or other minority groups. Even though there was a rebound in PLUS recipients in 2013-14, enrollment continued to decline at HBCUs, perhaps because of the loss of a substantial number of first-time enrollees in 2012-13 who would have continued enrolling in subsequent years.

A useful extension of this study would involve acquiring student-level data from HBCUs on financial aid and academic outcomes. Students whose parents received a PLUS loan during 2011-12 but were denied a PLUS loan in 2012-13 could be compared with students whose parents continued to receive a PLUS loan in 2012-13. This comparison would be informative about what changes in financial aid, credit completion, and grade point average are associated with the loss of a PLUS loan. A further extension of the study could involve examining similar student data after the implementation of the March 2015 rule change to relax PLUS credit standards. Such a study could provide insight about changes in outcomes for students whose parents were previously denied a PLUS loan but are able to obtain a PLUS loan under the new rules, examining, for example, if these students made different enrollment decisions in years when they did and did not receive a PLUS loan. An analysis of the outcomes of students whose parents experience a change in PLUS loan eligibility could be useful to HBCUs and other universities in helping to develop strategies to assist students who have financial aid needs that are not met.

Nexus: Connecting Research to Practice

- Policymakers responsible for the PLUS loan program should be aware that the number of PLUS loan recipients declined substantially at four-year colleges nationwide and at HBCUs in particular after the loan credit standards were tightened. The number of recipients increased somewhat after the appeals process for PLUS loan denials was streamlined.
- Campus enrollment managers and financial aid administrators should note that students may be unable or unwilling to substitute between money received from their parents and other sources of financial aid.
- Policymakers with the goal of increasing the enrollment of minority students should be aware that black student enrollment at four-year colleges decreased both nationwide and at HBCUs during 2012-13 and 2013-14.

Appendix A

In 2012, Congress made several changes to the Pell Grant program through the Consolidated Appropriations Act of 2012 (HR 3671). The act was implemented in June 2012 and affected Pell Grants awarded during 2012-13 and subsequent years (Katsinas, Davis, Friedel, Koh, & Grant, 2013). There were four main changes to the program:

1. The maximum number of years that a student could receive a Pell Grant was reduced from eight years (16 semesters) to six years (12 semesters) of full-time enrollment. This primarily affected continuing students, specifically those who take longer than six years to graduate.
2. The maximum adjusted gross income (AGI) for automatically qualifying for zero expected family contribution (EFC)—and the maximum Pell Grant amount—dropped from \$32,000 to \$23,000, which affected both incoming and continuing students (Association of Community College Trustees, 2011). Fewer than 20 percent of Pell Grant recipients have an AGI in this range, because approximately 20 percent of recipients have an AGI between \$20,000 and \$35,000 (U.S. Department of Education, Office of Postsecondary Education, 2014). Students who were affected by this AGI threshold change but continued to receive Pell Grants were expected to see an average decline in Pell award amount of \$715 (Association of Community College Trustees, 2011).
3. Students eligible to receive Pell Grants that were less than 10 percent of the maximum award amount were no longer eligible to receive Pell Grants. This change is likely to have reduced the Pell Grant award amount by approximately \$500 for a small number of students (Association of Community College Trustees, 2011).
4. Students without a high school diploma or GED could no longer receive Pell Grants after passing an “ability to benefit” test (Katsinas et al., 2013). This change primarily affected students at two-year colleges.

This appendix describes changes in Pell Grant receipt and average Pell award amounts in the 2012-13 school year. It is possible that some of the decline in total undergraduate enrollment observed at historically black colleges and universities (HBCUs) was related to the changes in the Pell Grant program. However, it is unlikely that much of the decline in first-year undergraduate enrollment at HBCUs resulted from these changes.

Among all undergraduate students, both the number and share of students receiving Pell Grants at HBCUs and other institutions decreased (Table A1). The largest decrease in the share of Pell recipients occurred at HBCUs (3.8 percentage points). The data are not sufficient to determine how much of the decline in total undergraduate enrollment at HBCUs might have been due to students choosing not to enroll after losing Pell Grant eligibility as a result of the new six-year lifetime maximum. However, the decrease in the number of students receiving PLUS loans at HBCUs between 2011-12 and 2012-13 (-16,878) was larger than the decrease in Pell recipients (-14,627). Given that the average amount students received through Pell Grants at HBCUs in 2011-12 (\$4,321) was less than the average that an HBCU student received via PLUS loans (\$14,330), the loss of Pell Grant eligibility due to the new six-year maximum likely had a smaller impact on student enrollment decisions than the loss of a PLUS loan.

Table A1

Changes in Pell Grant Dollar Amounts and Receipts During the 2012-13 School Year

	Historically Black colleges and universities (HBCUs) (n = 83)	Non HBCUs serving students from low- income families (n = 129)	Non HBCUs serving students from higher income families (n = 1,430)
All students			
Change in average size of grants (dollars)	20.2	-66.3	29.5
Change in number of grant recipients	-14,627	-12,797	-37,034
Change in share of students receiving grants	-3.8%	-2.6%	-0.6%
Full-time, first-time undergraduates			
Change in average size of grants	-49.3	-202.5	-38.4
Change in number of grant recipients	-1,283	-700	5,405
Change in share of students receiving grants	0.8%	0.2%	0.1%

Source: Authors' calculations based on data from the U.S. Department of Education, Integrated Postsecondary Education Data System (National Center for Education Statistics, 2015).

The data are also not sufficient to determine how many HBCU students who received Pell Grants were affected by the change to the zero EFC threshold. However, it is likely that this change had only small impacts on total undergraduate enrollment. As described previously, the change to the zero EFC threshold should have affected less than 20 percent of Pell recipients by \$715 on average in grant aid. At HBCUs, among students enrolled during 2012-13, the average Pell Grant award amount actually increased slightly (by \$20) relative to the 2011-12 average award amount (Table A1).

First-year students were generally not affected by the change to a lifetime maximum, so the new zero EFC threshold is the main change to the Pell Grant program that could have influenced their enrollment decisions. The average Pell Grant award amount for first-year students at HBCUs decreased by \$49 (Table A1). However, the share of first-year students receiving Pell Grants actually increased in 2012-13 by 0.8 percentage points at HBCUs. If all the first-year students who received lower than expected Pell Grant amounts at HBCUs in 2012-13 chose not to enroll in college, the share of first-year Pell Grant recipients would have declined rather than increased at HBCUs. Thus, it is unlikely that the decline in first-year undergraduate enrollment observed at HBCUs in 2012-13 was strongly related to changes in the Pell Grant program.

References

- Anderson, N. (2013). Tighter federal lending standards yield turmoil for historically Black colleges. *The Washington Post*. Retrieved August 22, 2013, from http://www.washingtonpost.com/local/education/tighter-federal-lending-standards-lead-turmoil-for-historically-black-colleges/2013/06/22/6ade4acc-d9a5-11e2-a9f2-42ee3912ae0e_story.html
- Association of Community College Trustees. (2011). Pell Grant eligibility changes. Washington, DC. Retrieved September 21, 2015 from <http://www.acct.org/files/Advocacy/Factsheets%20and%20Summaries/pell%20grant%20eligibility%20changes%20website.pdf>
- Baum, S., & Payea, K. (2013). *Trends in student aid 2013*. New York, NY: College Board. Retrieved June 15, 2014, from <http://trends.collegeboard.org/sites/default/files/student-aid-2013-full-report-140108.pdf>
- Belley, P., & Lochner, L. (2007). The changing role of family income and ability in determining educational achievement. *Journal of Human Capital*, 1(1), 37–89. <http://eric.ed.gov/?id=ED502002>
- Betts, J. R., & McFarland, L. L. (1995). Safe port in a storm: The impact of labor market conditions on community college enrollments. *Journal of Human Resources*, 30(4), 741–765.
- Board of Governors of the Federal Reserve System. (2007). *Report to the Congress on credit scoring and its effects on the availability and affordability of credit*. Retrieved June 23, 2014, from <http://www.federalreserve.gov/boarddocs/rptcongress/creditscore/>
- College Board. (2014). *Trends in student aid 2014*. Retrieved October 20, 2015, from <https://secure-media.collegeboard.org/digitalServices/misc/trends/2014-trends-student-aid-report-final.pdf>
- Christian, M. S. (2007). Liquidity constraints and the cyclical of college enrollment in the United States. *Oxford Economic Papers*, 59(1), 141–169.
- Dellas, H., & Koubi, V. (2003). Business cycles and schooling. *European Journal of Political Economy*, 19(4), 843–859.
- Department of Education Rulemaking Committee Meeting. (2014). Negotiated Rulemaking 2013-2014 Program Integrity and Improvement Committee Meetings Information. Retrieved April 13, 2015, from <https://www2.ed.gov/policy/highered/reg/hearulemaking/2012/programintegrity.html>
- Doubleday, J. (2013). With parents denied loans, students scramble at HBCUs. *Chronicle of Higher Education*. Retrieved February 5, 2014, from <http://chronicle.com/article/Without-Federal-PLUS-Loans/142147/>
- Dynarski, S., & Scott-Clayton, J. (2013). *Financial aid policy: Lessons from research*. Cambridge, MA: National Bureau of Economic Research.
- Field, K. (2014). Coming soon for PLUS loans: More eligible borrowers, new data on defaults. *Chronicle of Higher Education*. Retrieved October 27, 2014, from <http://chronicle.com/article/Coming-Soon-for-PLUS-Loans-/149593/>

- Fishman, R. (2014). *The parent trap: Parent PLUS loans and intergenerational borrowing*. Washington, DC: New America Education Policy Program. Retrieved May 13, 2014, from <http://education.newamerica.net/sites/newamerica.net/files/policydocs/Corrected-20140110-ParentTrap.pdf>
- Fry, R., & Lopez, M. H. (2012). *Hispanic student enrollments reach new highs in 2011*. Washington, DC: Pew Hispanic Center. Retrieved June 18, 2014, from <http://www.pewhispanic.org/2012/08/20/hispanic-student-enrollments-reach-new-highs-in-2011/>
- Fry, R., & Taylor, P. (2013). *Hispanic high school graduates pass Whites in rate of college enrollment*. Washington, DC: Pew Hispanic Center. Retrieved June 18, 2014, from <http://www.pewhispanic.org/2013/05/09/hispanic-high-school-graduates-pass-whites-in-rate-of-college-enrollment/>
- Gasman, M. (2009). Historically Black colleges and universities in a time of economic crisis. *Academe*, 95(6), 26–28. <http://eric.ed.gov/?id=EJ867307>
- Gasman, M. (2013). *The changing faces of historically Black colleges and universities*. Philadelphia, PA: University of Pennsylvania Graduate School of Education, Center for Minority Serving Institutions. Retrieved September 5, 2013, from http://www.gse.upenn.edu/pdf/cmsi/Changing_Face_HBCUs.pdf
- Ginder, S. A., & Kelly-Reid, J. E. (2013). Enrollment in postsecondary institutions, fall 2012; financial statistics, fiscal year 2012; graduation rates, selected cohorts, 2004–09; and employees in postsecondary institutions, fall 2012: First look (provisional data) (NCES No. 2013-183). Washington, DC: U.S. Department of Education, National Center for Education Statistics. <http://eric.ed.gov/?id=ED544569>
- Hoxby, C. (Ed.). (2004). *College choices: The economics of where to go, when to go, and how to pay for it*. Chicago, IL: University of Chicago Press.
- Huang, J., Guo, B., Kim, Y., & Sherraden, M. (2010). Parental income, assets, and borrowing constraints and children's post-secondary education. *Children and Youth Services Review*, 32(4), 545–594.
- Johnson, M. T. (2013). Borrowing constraints, college enrollment, and delayed entry. *Journal of Labor Economics*, 31(4), 669–725.
- Johnson, M., Bruch, J., & Gill, B. (2015). Changes in financial aid and student enrollment at historically Black colleges and universities after the tightening of PLUS credit standards (REL 2015–082). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Mid-Atlantic. <http://eric.ed.gov/?id=ED555652>
- Johnson, M., Bruch, J., & Gill, B. (2017). Changes in financial aid and student enrollment at historically Black colleges and universities after the tightening of PLUS credit standards: An update for the 2013/14 school year (REL 2017–254). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Mid-Atlantic. <https://eric.ed.gov/?id=ED572533>
- Jackson, B. A. & Reynolds, J. R. (2013). The price of opportunity: Race, student loan debt, and college achievement. *Sociological Inquiry*, 83(3), 335–368.

- Kane, T. J. (2006). Public intervention in post-secondary education. In E. A. Hanushek & F. Welch (Eds.), *Handbook of the Economics of Education* (Vol. 2, pp. 1370–1401). Washington, DC: Elsevier.
<http://eric.ed.gov/?id=ED527054>
- Katsinas, S. G., Davis, J. E., Friedel, J. N., Koh, J. P., Grant, P. D., The impact of the new Pell Grant restrictions on community colleges: a three state study of Alabama, Arkansas, and Mississippi. Tuscaloosa, AL: University of Alabama Education Policy Center. Retrieved May 21, 2015 from http://uaedpolicy.ua.edu/uploads/2/1/3/2/21326282/new_three_state_study.pdf.
- Keane, M. P., & Wolpin, K. I. (2001). The effect of parental transfers and borrowing constraints on educational attainment. *International Economic Review*, 42(4), 1051–1103.
- Kienzl, G. S., Alfonso, M., & Melguizo, T. (2007). The effect of local labor market conditions in the 1990s on the likelihood of community college students' persistence and attainment. *Research in Higher Education*, 48(7), 751–774. <http://eric.ed.gov/?id=EJ785018>
- Kim, D. B. (2007). The effect of loans on students' degree attainment: Differences by student and institutional characteristics. *Harvard Educational Review*, 77(1), 64-100.
- Kim, M. M., & Conrad, C. F. (2006). The impact of historically Black colleges and universities on the academic success of African-American students. *Research in Higher Education*, 47(4), 399–427.
<http://eric.ed.gov/?id=EJ735988>
- Kinsler, J., & Pavan, R. (2011). Family income and higher education choices: The importance of accounting for college quality. *Journal of Human Capital*, 5(4), 453–477.
- Knapp, L. G., Kelly-Reid, J. E., & Ginder, S. A. (2012). *Enrollment in postsecondary institutions, fall 2011; financial statistics, fiscal year 2011; and graduation rates, selected cohorts, 2003–2008: First look (provisional data)* (NCES No. 2012-174). Washington, DC: U.S. Department of Education, National Center for Education Statistics. <http://eric.ed.gov/?id=ED536025>
- Lovenheim, M. F. (2011). The effect of liquid housing wealth on college enrollment. *Journal of Labor Economics*, 29(4), 741–771.
- Lovenheim, M. F., & Reynolds, C. L. (2013). The effect of housing wealth on college choice: Evidence from the housing boom. *Journal of Human Resources*, 48(1), 1–35.
- Montgomery, M., & Montgomery, B. L. (2012). Graduation rates at historically Black colleges and universities: An underperforming performance measure for determining institutional funding policies. *Journal of Continuing Higher Education*, 60(2), 93–109. <http://eric.ed.gov/?id=EJ972648>
- National Center for Education Statistics (NCES). (2004). *The condition of education 2004*. NCES 2004-077. Washington, D.C.: U.S. Government Printing Office.
- National Center for Education Statistics (NCES). (2017). *The condition of education 2017*. NCES 2017144. Washington, D.C.: U.S. Government Printing Office.
- Nelson, L. A. (2012). Cracking down on PLUS loans. *Inside Higher ED*. Retrieved September 23, 2013, from <http://www.insidehighered.com/news/2012/10/12/standards-tightening-federal-plus-loans>

- Ochoa, E. M. (2012). *Changes made to the Title IV Student Aid Programs by the recently enacted Consolidated Appropriations Act, 2012*. Washington, DC: U.S. Department of Education, Federal Student Aid Office. Retrieved February 18, 2019, from <https://ifap.ed.gov/dpccletters/GEN1201.html>
- O'Flaherty, S. (2013). *Update to direct PLUS loan reconsideration process*. Washington, DC: U.S. Department of Education, Federal Student Aid Office. Retrieved April 14, 2015, from <https://ifap.ed.gov/eannouncements/081313UpdatetoDirectPLUSLoanReconsiderationProcess.html>
- O'Flaherty, S. (2015). *Direct PLUS loan changes—system changes for the determination of adverse credit history and the duration of a credit check (from 90 days to 180 days) to be implemented March 27–29, 2015*. Washington, DC: U.S. Department of Education, Federal Student Aid Office. Retrieved April 16, 2015, from <https://ifap.ed.gov/eannouncements/022715DirectPLUSLoanAdverseCreditHistoryCriteriafrom90to180daysImplementMar2729.html>
- Olbrecht, A. M., C. Romano, & J. Teigen (2016). How money helps keep students in college: the relationship between family finances, merit-based aid, and retention in higher education. *Journal of Student Financial Aid*, 46(1), article 2. <http://publications.nasfaa.org/jsfa/vol46/iss1/2>
- Palmer, R. T., Davis, R. J., & Hilton, A. A. (2009). Exploring challenges that threaten to impede the academic success of academically underprepared Black males at an HBCU. *Journal of College Student Development*, 50(4), 429–445. <http://eric.ed.gov/?id=EJ852899>
- Radwin, D., Conzelmann, J. G., Nunnery, A., Lacy, T. A., Wu, J., Lew, S., Wine, J., & Siegel, P. (2018). *2015–16 National Postsecondary Student Aid Study (NPSAS:16): Student financial aid estimates for 2015–16* (NCES No. 2018-466). Washington, DC: U.S. Department of Education, National Center for Education Statistics. <https://eric.ed.gov/?id=ED580387>
- Richards, D. A. R., & Awokoya, J. T. (2012). *Understanding HBCU retention and completion*. Fairfax, VA: United Negro College Fund, Frederick D. Patterson Research Institute.
- Snyder, T. D., & Dillow, S. A. (2013). *Digest of education statistics 2012* (NCES No. 2014-015). Washington, DC: U.S. Department of Education, National Center for Education Statistics. <http://eric.ed.gov/?id=ED544579>
- St. John, E. P., Paulsen, M. B., & Carter, D. F. (2005). Diversity, college costs, and postsecondary opportunity: An examination of the financial nexus between college choice and persistence for African Americans and Whites. *Journal of Higher Education*, 76(5), 545–569. <http://eric.ed.gov/?id=EJ725288>
- United Negro College Fund. (2014). *The parent PLUS loan crisis: An urgent crisis facing students at the nation's HBCUs*. Retrieved September, 26, 2014, from <http://www.uncf.org/sites/advocacy/SpecialInitiatives/ParentsPlus/MediaDocuments/UNCF-Report-THE-PARENT-PLUS-LOAN-CRISIS-3.25.14.pdf>
- U.S. Department of Education, Federal Student Aid Office. (2015). Title IV program volume reports, AY 2011-2012, AY 2012-2013, and AY 2013-2014. Retrieved May 15, 2015, from <https://studentaid.ed.gov/about/data-center/student/title-iv>.

- U.S. Department of Education, National Center for Education Statistics. (2015). Integrated postsecondary education data system, 1997-1998 – 2013-2014. Retrieved May 21, 2015, from <http://nces.ed.gov/ipeds/datacenter/>
- U.S. Department of Education, Office of Postsecondary Education. (2014). *2012–2013 Federal Pell Grant program end-of-year report*. Retrieved May 21, 2015, from <https://www2.ed.gov/finaid/prof/resources/data/pell-2013-14/pell-eoy-2013-14.html>
- U.S. Department of Education. (2014). *William D. Ford Federal Direct Loan Program: Final regulations* (79 Federal Register 63317). Retrieved October 27, 2014, from <http://federalregister.gov/a/2014-25266>
- Wang, M., Supiano, B., & Fuller, A. (2012). The parent loan trap. *Chronicle of Higher Education*. Retrieved January 8, 2014, from <https://chronicle.com/article/The-Parent-Loan-Trap/134844/>
- Winter, C. (2014). Accounting for the changing role of family income in determining college entry. *Scandinavian Journal of Economics*, 116(4), 909–963.