Who Graduates with Excessive Student Loan Debt?

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Executive Summary

Student loan debt has been growing rapidly over the last decade. But, while milestones may be impressive, what matters more is the growth in excessive student loan debt at graduation.

A borrower has excessive student loan debt when the borrower graduates with more debt than he or she can afford to repay in a reasonable amount of time, such as within 10 years of graduation. This paper defines excessive debt as occurring when the borrower's debt-service-to-income ratio – the percentage of monthly gross income devoted to repaying student loan debt – is 10% or more under a standard 10-year repayment plan.

A borrower has excessive student loan debt when 10% or more of a borrower's gross income must be devoted to repaying the borrower's student loan debt, assuming a 10-year repayment term

This paper provides a rational justification for using the 10% debt-service-to-income ratio as a cap on affordable student loan debt. It derives the threshold by assuming that part of the after-tax increase in income for Bachelor's degree recipients (as compared with high school graduates) is available to repay student loan debt, assuming a 10-year repayment term. The 10% threshold corresponds to using half of the additional net income to repay student loan debt. The paper also derives a 15% debt-service-to-income threshold as a "stretch limit" by assuming that three-quarters of the additional net income is available to repay student loan debt.

The 10% and 15% debt-service-to-income thresholds are also consistent with the rule of thumb that total student loan debt at graduation should be less than the borrower's expected annual starting salary.

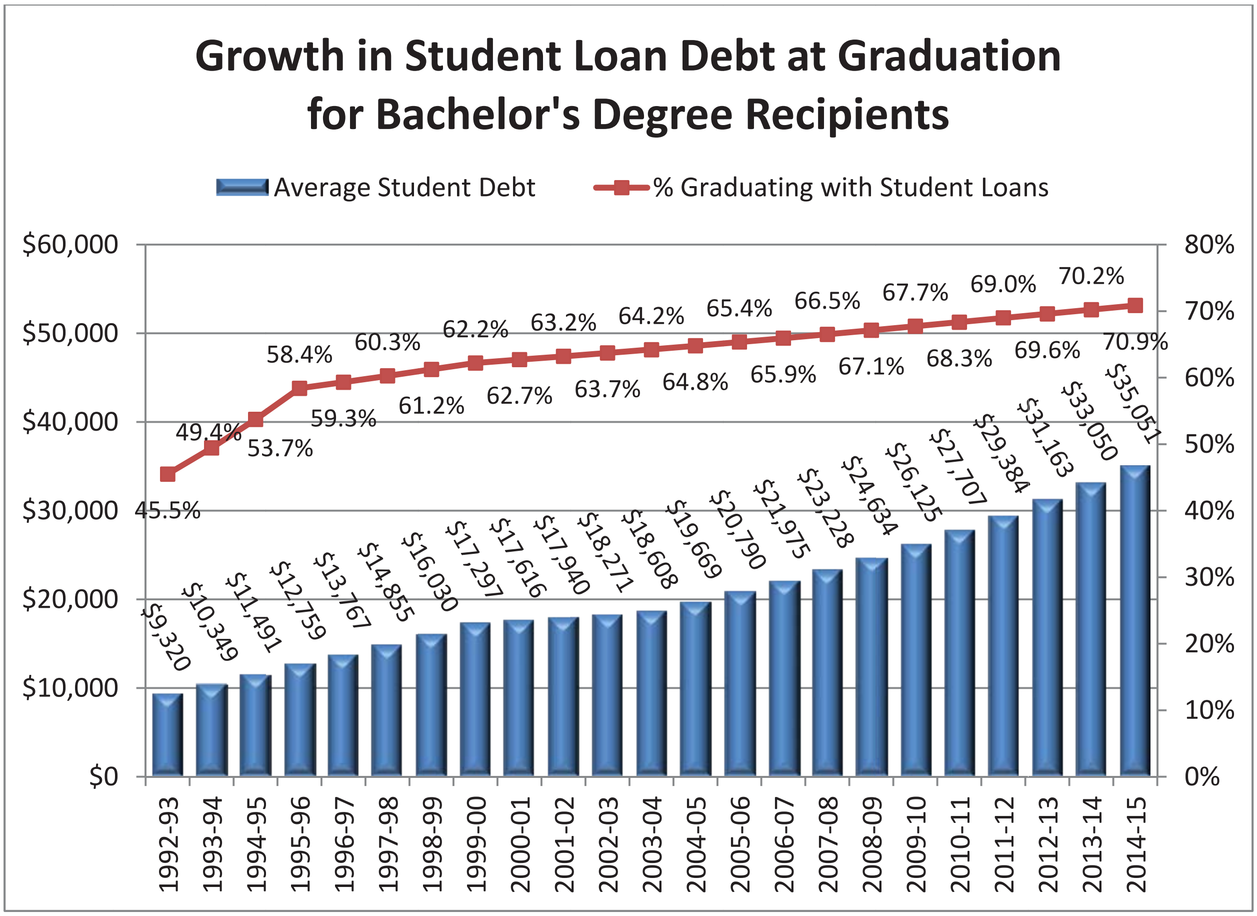
This paper presents several other new results concerning students graduating with excessive student loan debt.

- The percentage of Bachelor's degree recipients graduating with excessive student loan debt has been growing for the last three decades. But, the percentage of Bachelor's degree recipients graduating with student loan debt who graduate with excessive debt has remained at slightly more than a quarter of Bachelor's degree recipients who graduate with student loan debt for the last two decades. This suggests that the growth in the percentage of Bachelor's degree recipients with excessive debt is driven by the overall growth in the percentage of students who must borrow to pay for college.
- Students who graduate with excessive student loan debt are more likely to delay major life-cycle events, such as buying a home, getting married and having children, than students who graduate with affordable debt.
- Students who graduate with excessive debt are more likely to take a job outside their field, to work more than desired and to work more than one job. They are also significantly more likely to say that their education debt influenced their employment plans.
- Students who graduate with excessive debt are just as likely to own a car as students who graduate with affordable debt, but are less likely to have a car payment of $350 or more. Thus, graduating with excessive student loan debt can be the difference between owning a new car and a used car.
- Students who graduate with excessive debt are less likely to feel that their undergraduate education was worth the financial cost, as of one year after graduation.

Growth in Student Loan Debt

Rapid growth in the amount of outstanding student loan debt has drawn the attention of news media and the public to the "student loan problem." Outstanding student loan debt exceeded credit card debt in 2010, auto loans in 2011 and $1 trillion in 2012, now second only to home mortgage debt.

While the growth in outstanding student loan debt is noteworthy, the impact on individual borrowers matters more. This chart, which is based on data from the National Postsecondary Student Aid Study (NPSAS), demonstrates the steady growth in the percentage of Bachelor's degree recipients who graduate with student loan debt and the average debt at graduation for those who graduate with debt.



But, the growth in debt at graduation is not necessarily a problem, if most borrowers can afford to repay their loans. So, it is important to ask: How many students are graduating with excessive debt?

Defining Excessive Debt

Student loan debt is excessive when the borrower cannot afford to repay it in full within a reasonable amount of time, such as within 10 years or less after graduation.

The standard repayment term for federal student loans is 10 years. Borrowers can reduce their monthly loan payment by choosing a longer repayment term. For example, extended repayment and income-driven repayment plans can increase the repayment term to 20, 25 or even 30 years. But, increasing the repayment term also increases the total amount paid over the life of the loan.

Borrowers who increase the repayment term will still be repaying their own student loans when their children enroll in college. They will be less likely to have saved for their children's college education and they will be less willing to borrow to help them pay for college. Thus, the burden of repaying excessive student loan debt will be severe enough to affect the next generation's ability to pay for college.

Determining whether the student loan debt is affordable requires a comparison of debt with income, not debt by itself. Six-figure student loan debt might be excessive for a borrower with just a Bachelor's degree in a low-paying liberal arts field, but not for a borrower who earns an advanced degree, such as an M.D. in a lucrative specialty like oncology, cardiology or orthopedics. To determine whether the student loan debt is affordable, the monthly loan payment must be compared with monthly income.

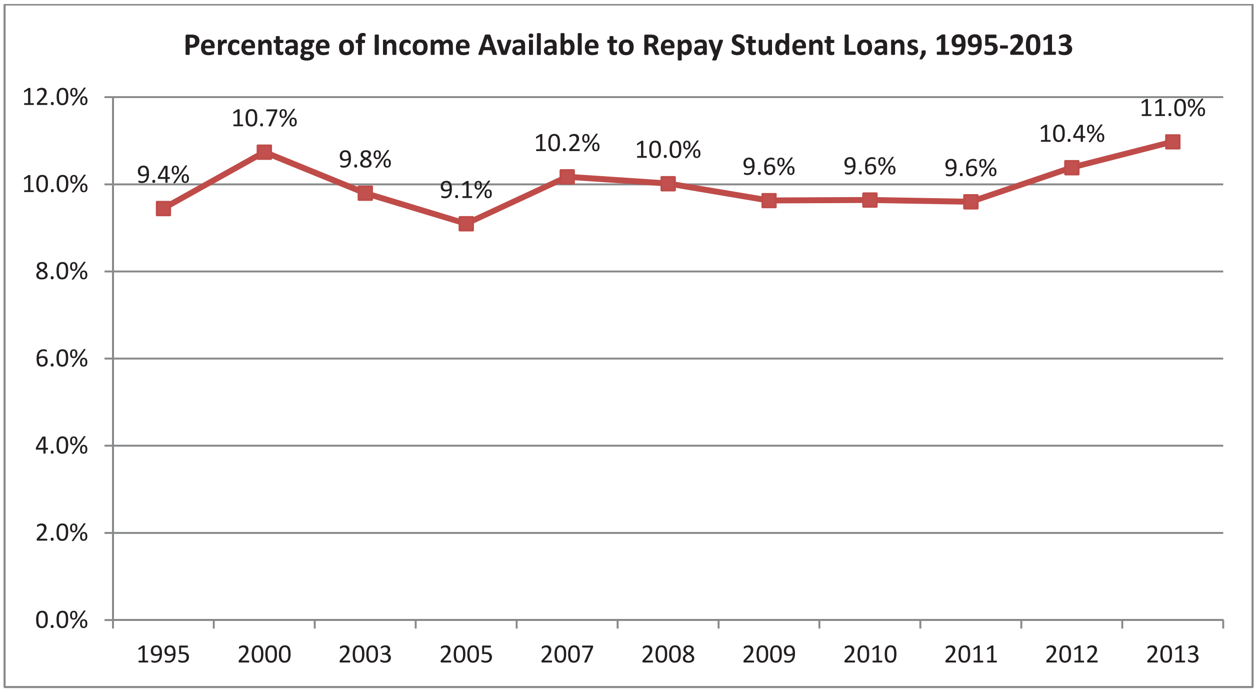
Many students pursue a college education in order to obtain a better-paying job. Accordingly, it is reasonable to require that the incremental increase in net income after taxes from obtaining a college degree should be sufficient to repay the student loan debt. Moreover, one could argue that half of the increase in take-home pay should be available for repaying student loans and half for other priorities, so that the college graduate derives an immediate financial benefit from earning a college degree.

Table 502.30 of the 2014 Digest of Education Statistics provides data on the median annual earnings of full-time, year-round workers age 25 to 34 by educational attainment for selected years from 1995 to 2013.[1] This data is based on the U.S. Census Bureau's Current Population Survey (CPS). In 2013, the median annual earnings for full-time, year-round workers with only a Bachelor's degree in the decade from age 25 to age 34 was $48,530, compared with $30,000 for workers with just a high-school diploma or GED. This yields an average $18,530 increase in annual gross income from obtaining a Bachelor's degree. Assuming a 25% federal income tax rate, 7.65% in FICA taxes and up to 9.8% in state and local income taxes, this yields $10,655 after taxes, or 22.0% of gross income. Half of this figure is 11.0%, setting a reasonable limit on the percentage of income available to repay student loan debt.

Table P-24 of historical income tables for the Current Population Survey (CPS)[2] provides similar data concerning median earnings by educational attainment for full-time, year-round workers age 25 and older.[3] However, unlike table 502.30, this data is not limited to the decade from age 25 to 34. Nevertheless, this income data yields a similar result, capping the percentage of income reasonably available to repay student loan debt at 11.2% of gross earnings in 2013 and 2014 and around 10.2% in the early 1990s.

[1] http://nces.ed.gov/programs/digest/d14/tables/dt14_502.30.asp
[2] https://www.census.gov/hhes/www/income/data/historical/people/
[3] https://www.census.gov/hhes/www/income/data/historical/people/2014/p24.xls

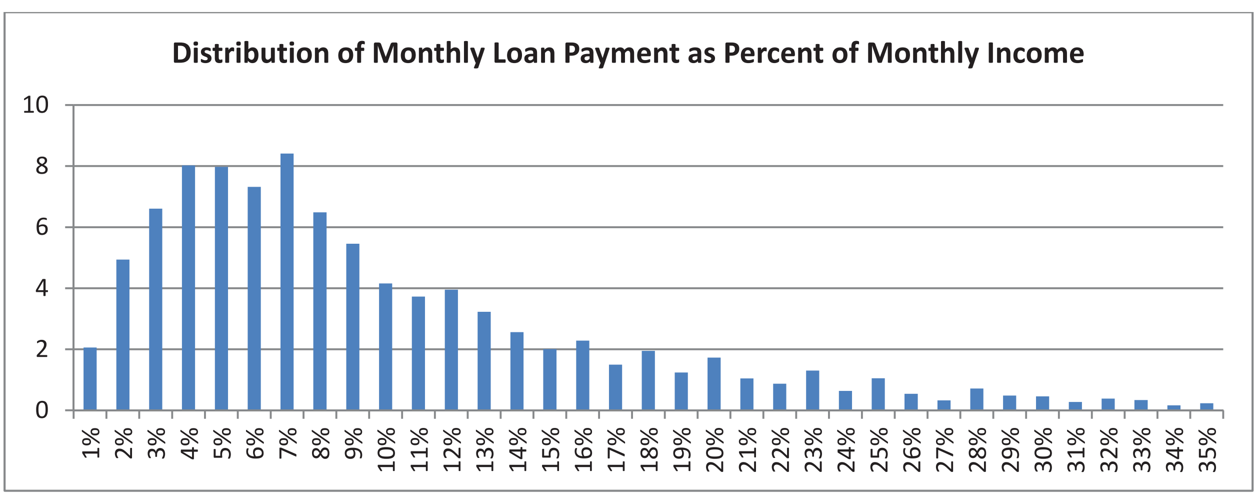
This chart shows limits based on percentages of historical income data derived from Table 502.30.



As this chart demonstrates, the debt-service-to-income percentage has averaged about 10.0% for the last two decades. Using a similar approach to base the stretch limit on three-quarters of the increase in net income after taxes would yield a percentage of gross income that averages around 15%.

Thus, student loan debt at graduation should be considered affordable if the monthly loan payments assuming a 10-year repayment term are less than 10% of gross monthly income. The student loan payments will still be affordable, but more of a financial stretch for the borrower, if the payments are less than 15% of gross monthly income.

To set this in context, this table shows a histogram of debt-service-to-income ratios for Bachelor's degree recipients in 2007-08 based on 2009 income, using the 2012 follow-up to the 2007-08 Baccalaureate & Beyond longitudinal study (BB12). The mode is at 7% and the median is at 8%.



This table shows the percentage of Bachelor's degree recipients graduating in 2007-08 with excessive student loan debt for various caps on the debt-service-to-income ratio, based on BB12 data. Thus, the 10% threshold corresponds to about a quarter of Bachelor's degree recipients graduating with excessive student loan debt.

Cap on Debt-Service-to-Income Ratio	Percent of Bachelor's Degree Recipients Graduating with Excessive Debt
5%	49.3%
8%	33.7%
10%	27.2%
15%	16.2%
20%	10.0%
25%	6.6%

Note that data for the first year after graduation tends to represent a ceiling on the amount of student loan debt and a floor on the amount of income, since student loan debt tends to decrease and income tends to increase over the borrower's career. So, the debt-to-income and debt-service-to-income ratios will tend to decrease over time.

This definition of excessive debt in terms of the debt-service-to-income ratio represents a more direct measure of whether students are graduating with affordable student loan debt than the cohort default rate (CDR). The cohort default rate measures the percentage of students entering repayment during one federal fiscal year who default by the end of a subsequent federal fiscal year. Defaulting on a student loan is a potential consequence of excessive debt, but not the only possible consequence. Also, some borrowers default on their student loans for reasons other than affordability of the debt. So, the cohort default rate is, at best, an indirect measure of whether students are graduating with affordable student loan debt. The CDR does not measure other non-paying statuses, such as deferments, forbearances and delinquencies. Moreover, borrowers who graduate with excessive debt might reduce the debt-service-to-income ratio by choosing alternate repayment plans that stretch out the repayment term instead of defaulting. Also, the cohort default rate is prone to manipulation by colleges that encourage borrowers to apply for deferments and forbearances, pushing the default outside the measurement window.

The derivation of a 10% to 15% cap on the debt-service-to-income ratio is also more rational than the flawed reasoning used to justify an 8% cap on the debt-service-to-income ratio in the 2014 gainful employment regulations.[4] The regulations selectively cited papers that based an 8% cap on the difference between mortgage underwriting standards for *all* debt and mortgage underwriting standards for *mortgage* debt. In addition to arbitrarily overlooking similar approaches that justified different caps on the debt-service-to-income ratio, the regulations' derivation of the student loan cap from mortgage underwriting standards assumes that mortgage lenders know more about affordable student loan debt than student loan experts. It also assumes that student loan debt is affordable only if the borrower is able to afford to buy a home instead of renting an apartment.[5]

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[4] Federal Register 79(211):64890 -65103, October 31, 2014. See specifically the discussion that begins on page 64917. https://www.gpo.gov/fdsys/pkg/FR-2014-10-31/pdf/2014-25594.pdf

[5] The Administrative Procedure Act requires federal agencies to provide a reasoned basis for justifying regulations, but there is no requirement that the reasoned basis involve *good* reasoning.

Rule of Thumb: Total Debt Less than Annual Income

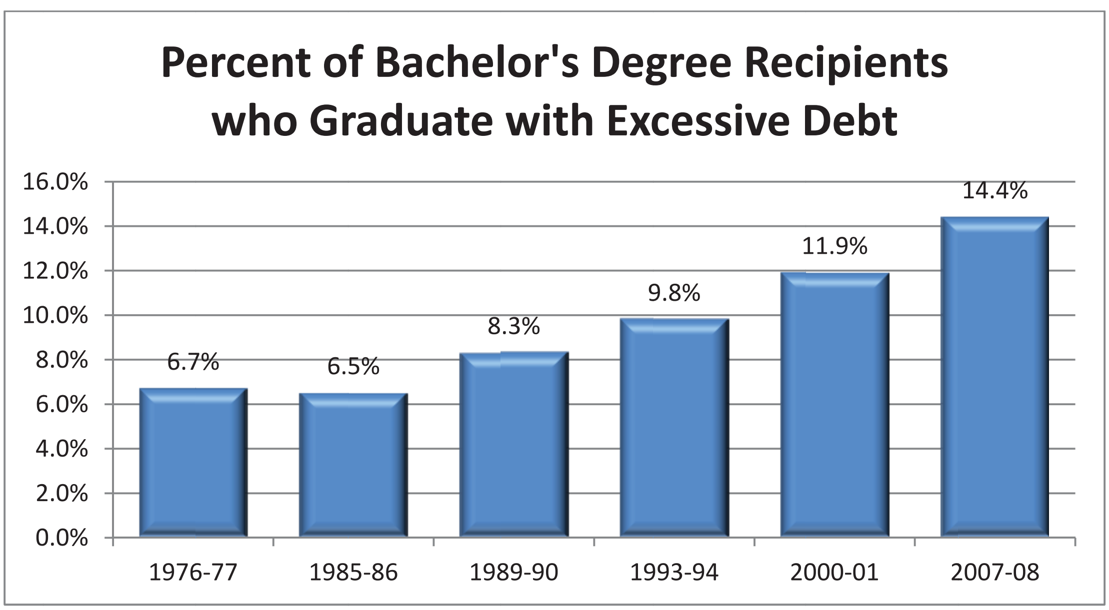
The rule of thumb that total student loan debt at graduation should be less than the expected annual starting salary corresponds to a percentage of gross monthly income within the range of 10% to 15%, as shown by this table. This table assumes a 10-year repayment term. Accordingly, the rule of thumb is consistent with the distinction between affordable and excessive student loan debt.

Interest Rate	Percentage of Gross Income	Interest Rate	Percentage of Gross Income
0.0%	10.0%	**5.0%**	12.7%
1.0%	10.5%	**6.0%**	13.3%
2.0%	11.0%	**6.8%**	13.8%
3.0%	11.6%	**7.0%**	13.9%
3.4%	11.8%	**8.0%**	14.6%
4.0%	12.1%	**8.5%**	14.9%
4.29%	12.3%	**9.0%**	15.2%

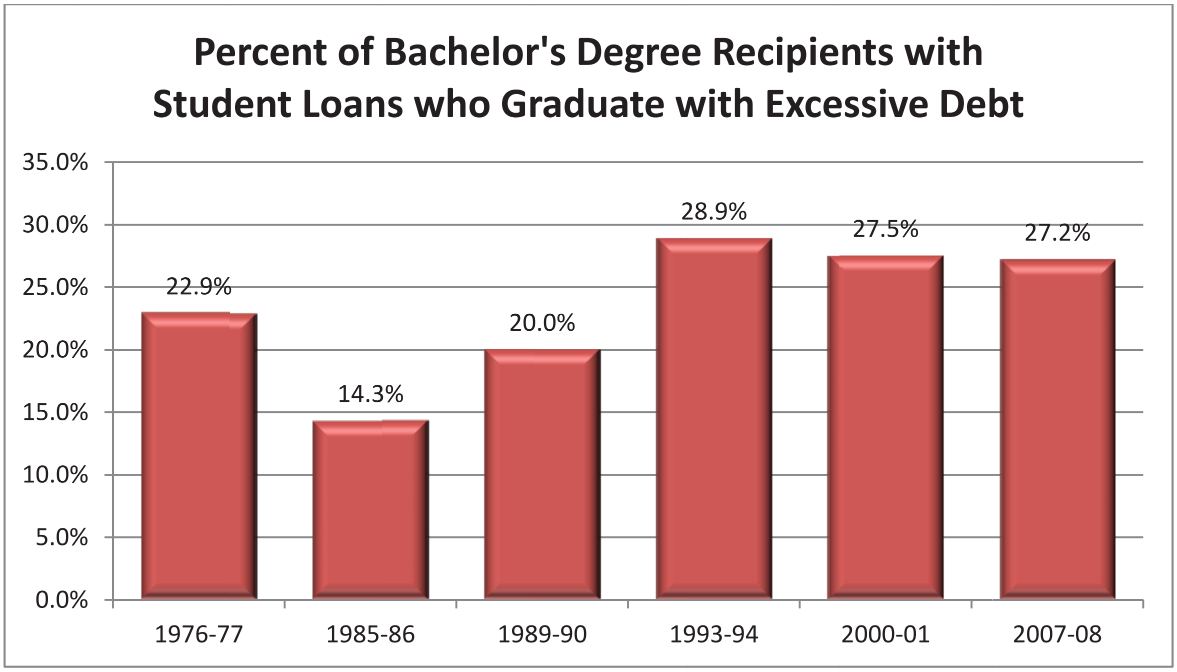
Percentage of College Graduates with Excessive Debt

Using the 10% debt-service-to-income ratio as a threshold on affordable vs. excessive debt, it becomes possible to calculate the percentage of college students who graduate with excessive student loan debt.

This chart shows how the percentage of Bachelor's degree recipients who graduated with excessive student loan debt has changed over the last four decades. Excessive student loan debt is based on the 10% cap on the debt-service to income ratio, income the year after graduation and a 10-year repayment term. Data for 1993-94, 2000-01 and 2007-08 are based on the Baccalaureate and Beyond (B&B) longitudinal studies. Data for 1976-77, 1985-86 and 1989-90 are based on a similar series of studies, the Survey of Recent College Graduates (RCG). This chart shows an increasing trend in the percent of Bachelor's degree recipients who are graduating with excessive student loan debt.



This chart uses the same data to calculate the percentage of Bachelor's degree recipients with excessive student loan debt as a percentage of those graduating with student loan debt, not all Bachelor's degree recipients. When those who graduate with no debt are omitted, slightly more than a quarter of Bachelor's degree recipients who borrowed for their education are graduating with excessive student loan debt.



This demonstrates that a relatively constant percentage of students who borrow are graduating with excessive debt. It suggests that the recent growth in the percentage of Bachelor's degree recipients who are graduating with excessive debt is due to growth in the percentage of students who must borrow to pay for college, due to a shift in the burden of paying for college from the federal and state governments to families.

Overall, an average of 12.6% of monthly income is used to repay student loans the year after graduation for 2007-08 Bachelor's degree recipients who graduated with student loan debt, based on BB12 data. The average decreases to 8.9% when students who graduated with no debt are included.

Women are more likely to graduate with excessive debt than men (29.1% to 24.3%). They also have a higher average debt-service-to-income ratio (13.2% to 11.6%), mostly due to women earning lower income than men after graduation, even when employed in the same occupations.[6]

Caucasian students are more likely to graduate with excessive debt (30.0%) than Black or African-American students (14.6%) or Hispanic or Latino students (21.2%). This may be due to a greater increase in income for minority students who obtain college degrees, even though the average income is lower than for Caucasian students. It could also be due to differences in the balance between student and parent education debt.

[6] Catherine Hill and Christianne Corbett, *Graduating to a Pay Gap: The Earnings of Women and Men One Year after College Graduation*, AAUW, 2012. http://www.aauw.org/research/graduating-to-a-pay-gap/

Students majoring in theology (64.7%), law and legal studies (43.1%), communications (36.2%), agriculture (34.1%), education (33.9%), humanities (33.5%) and design (33.1%) are more likely to graduate with excessive debt, presumably due to the lower income in these fields of study. Students majoring in engineering (16.3%) and computer science (23.8%) are less likely to graduate with excessive debt, presumably due to the higher income in these fields of study.

Students who borrowed private student loans are more likely to graduate with excessive student loan debt (36.4% vs. 22.8%). This may be because it is more difficult for dependent students to borrow excessively with federal student loans alone, given the low annual and cumulative loan limits on federal student loans.

A college's annual cost of attendance correlates with the percentage of students graduating with excessive student loan debt, as shown in this table based on BB12 data. College costs are a key driver of debt at graduation, so higher-cost colleges are more likely to have more students graduating with excessive student loan debt.

2007-08 Annual Cost of Attendance	Percent Graduating with Excessive Debt
Less than $10,000	22.2%
$10,000 to $19,999	24.7%
$20,000 to $29,999	29.5%
$30,000 to $39,999	34.6%
$40,000 or more	34.6%

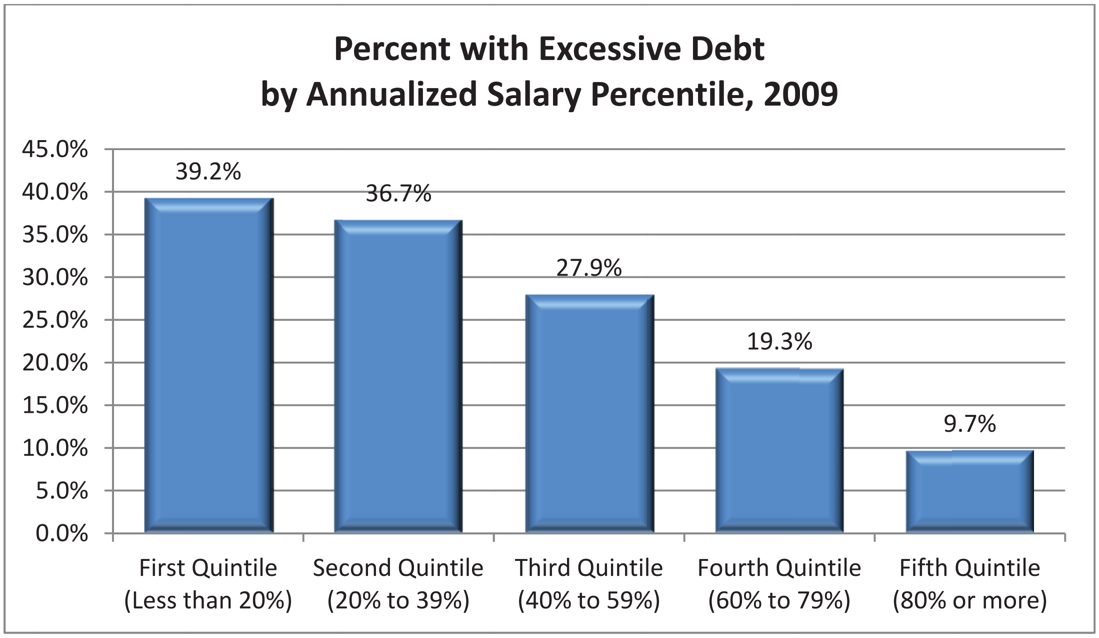
The college affordability index[7] correlates with excessive student loan debt. Students for whom the college affordability index is 75% or more are more likely to graduate with excessive debt than students for whom the college affordability index is less than 25% (32.7% vs. 24.8%).

Dependent students (as defined for federal student aid purposes) are more likely to graduate with excessive debt than independent students (30.2% vs. 23.2%). This is largely because students who are age 30 or older are much less likely to graduate with excessive student loan debt (16.4%), slightly more than half the rate for younger students.

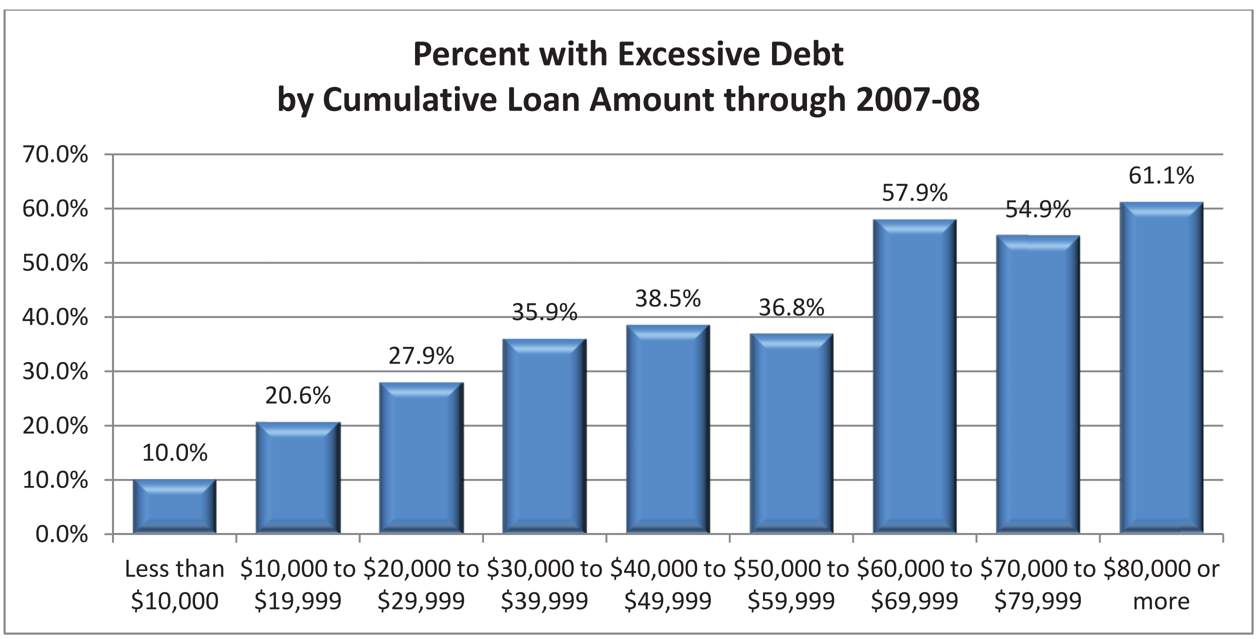
College graduates who work for the military (22.3%) or government (22.9%) are less likely to have excessive student loan debt than graduates who work for a for-profit company (27.6%), a non-profit organization (31.2%) or who are self-employed (36.6%). Students who work in science, technology, engineering and mathematics (STEM) occupations are much less likely to graduate with excessive debt (14.8%) than students who work in non-STEM occupations (28.2%).

[7] The college affordability index is the ratio of the net price to total family income. Colleges that are more affordable for a student have a lower college affordability index. The net price is the difference between the annual cost of attendance and gift aid (grants, scholarships and other money that does not need to be earned or repaid).

This chart shows that high-income Bachelor's degree recipients are less likely to have excessive student loan debt than low-income Bachelor's degree recipients, based on BB12 data.



This chart shows that Bachelor's degree recipients with higher student loan balances are more likely to have excessive student loan debt than Bachelor's degree recipients with lower student loan balances, based on BB12 data.



Home-schooled students are more likely to graduate with excessive debt (48.3%) than students with a high school diploma (27.1%) or GED (25.9%).

Students who receive private scholarships are more likely to graduate with excessive debt (31.2% vs. 26.8%), perhaps because scholarship recipients are more likely to enroll at higher-cost colleges.

High school GPA, undergraduate GPA, SAT test scores, disability status, participation in study abroad, status as a transfer student, institutional selectivity, in-state vs. out-of-state enrollment and Federal Pell Grant recipient status do not seem to have a significant impact on whether the student graduates with excessive debt or not.

Consequences of Graduating with Excessive Debt

Students who graduate with excessive student loan debt are more likely to have borrowed private student loans (42.8% vs. 27.3%), based on BB12 data. Dependent undergraduate students cannot graduate with excessive debt using only federal student loans.

Students who graduate with excessive student loan debt are more likely to feel that their undergraduate education was *not* worth the financial cost as of the year after graduation (35.8% vs. 22.2%) and more likely to say that the debt influenced their employment plans (64.3% vs. 41.6%), based on BB12 data.

Students who graduate with excessive debt are less likely to have a car payment of $350 or more as of four years after graduation (44.9% vs. 54.1%) and to be paying a mortgage (34.1% vs. 42.5%), based on BB12 data. But, borrowers appear to be equally likely to have a car payment. Rather, excessive debt seems to manifest itself in a lower car payment and a lower monthly rent or mortgage payment, so that the student loan payment is a greater percentage of overall household debt payments. Curiously, students who graduate from for-profit colleges tend to have higher car payments and higher monthly rent or mortgage payments, despite their higher student loan debt.

These are some of the other reported consequences of graduating with excessive debt, based on BB12 data:

- Delayed buying a home (49.8% vs. 38.1%)
- Delayed getting married (27.1% vs. 20.9%)
- Delayed having children (36.4% vs. 27.9%)
- Took a job instead of enrolling in further postsecondary education (43.3% vs. 33.0%)
- Took a job outside of field (50.8% vs. 36.4%)
- Work more than desired (47.8% vs. 36.4%)
- Worked more than one job (33.0% vs. 23.4%)

Potential Compliance with Gainful Employment

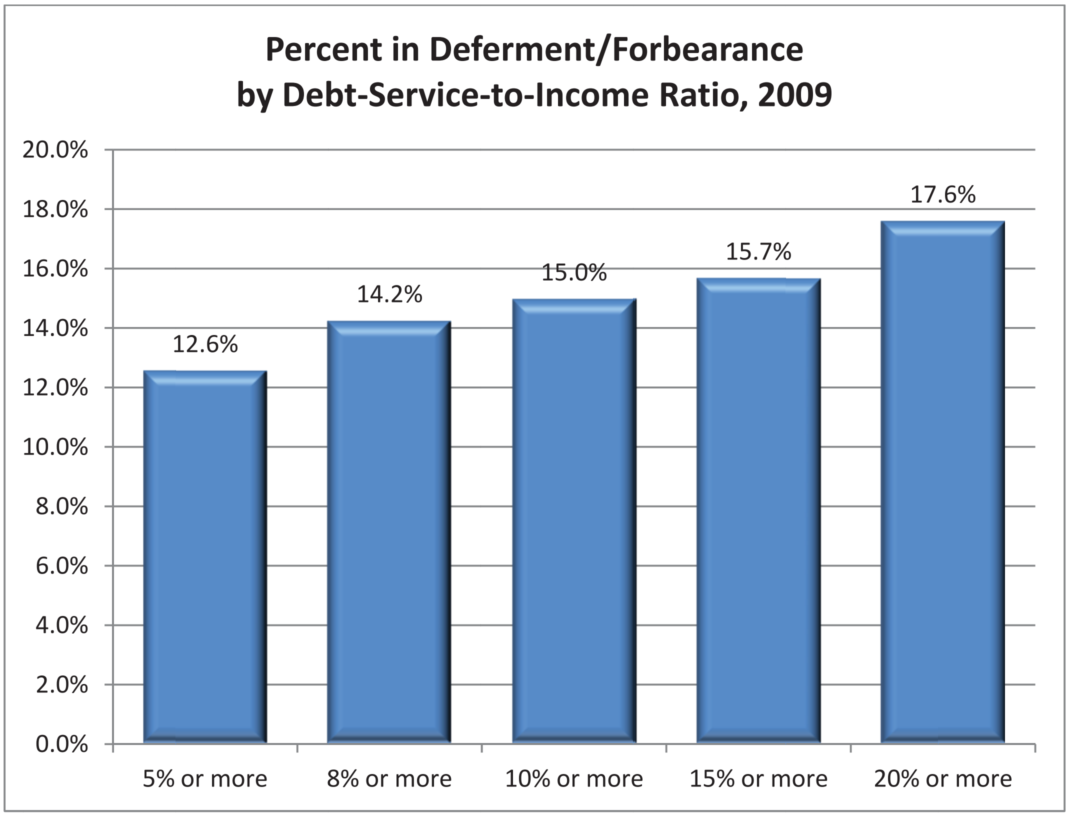
The average debt-service-to-income ratio is 15.2% for private non-profit colleges, 12.6% for private for-profit colleges and 11.0% for public colleges, based on BB12 data.

Using the 8% debt-service-to-income ratio threshold used in the gainful employment regulations, 40.0% of Bachelor's degree recipients at private non-profit colleges would have excessive debt, compared with 33.8% of Bachelor's degree recipients at private for-profit colleges and 30.0% of Bachelor's degree recipients at public colleges, based on BB12 data. This suggests that private non-profit colleges would have more problems complying with the gainful employment regulations than private for-profit colleges, if the gainful employment regulations were applied to Bachelor's degree recipients at private non-profit colleges. Most Bachelor's degree granting institutions would have problems complying with the gainful employment regulations even if the threshold for affordable debt were set at 15%.

Correlation of Excessive Debt with Debt and Income

Previous studies by other researchers have reported that borrowers with lower debt levels are more likely to default than borrowers with higher debt levels. The data concerning excessive debt at graduation presented in this report is not consistent with these previous studies. This suggests that financial stress – the failure to keep debt in sync with income – does not explain the results reported by the previous studies.

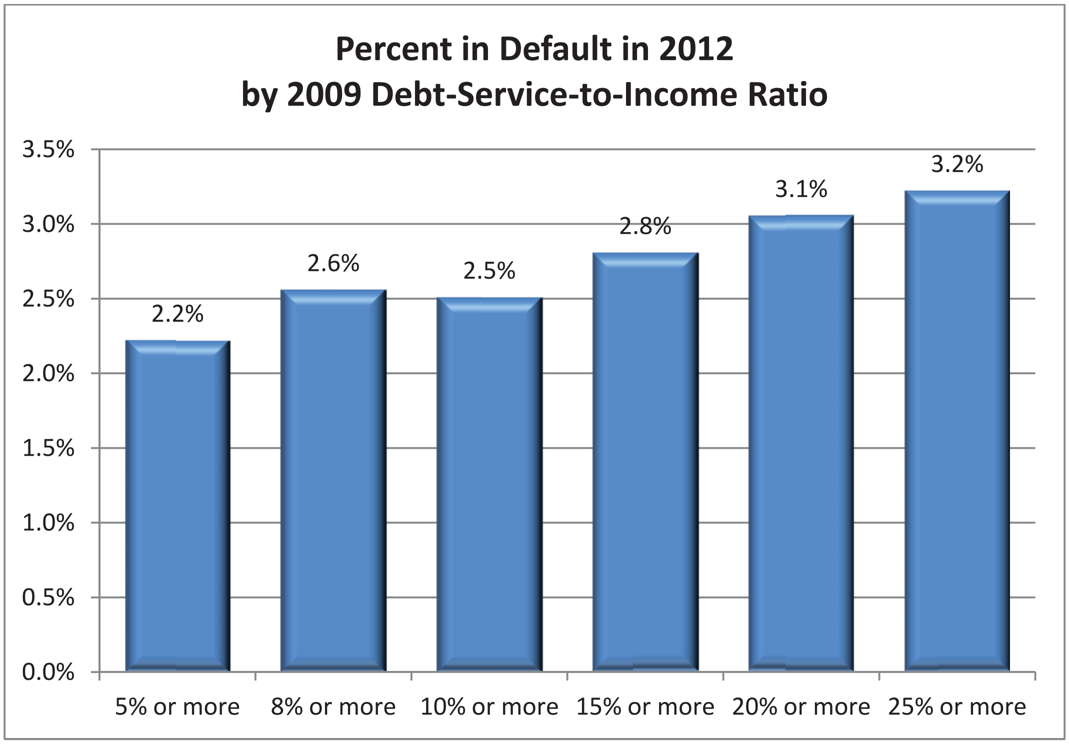
A previous study by the author of this paper demonstrates that default rates increase with increases in the debt-service-to-income ratio, suggesting that graduating with excessive debt can be a cause of student loan default.[8] This chart shows that the debt-service-to-income ratio correlates with the percentage of borrowers in a deferment or forbearance, an indicator of financial stress.[9]



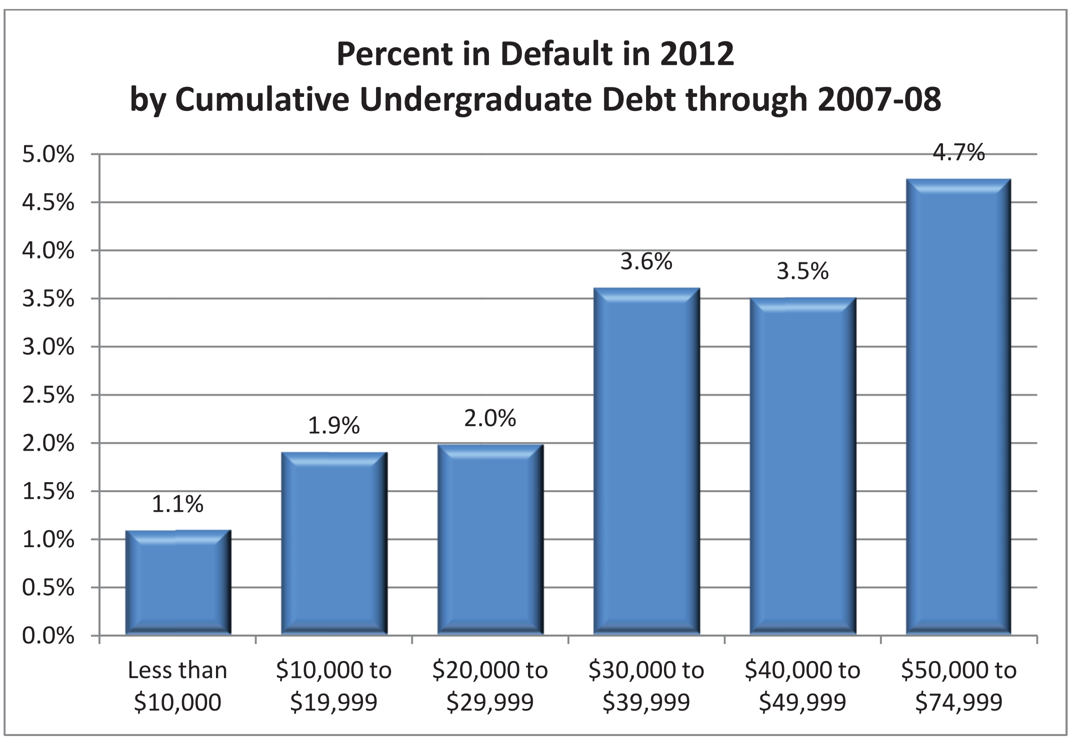
[8] Mark Kantrowitz, *Relationship of Default Rates to Debt and Income*, August 17, 2010. www.finaid.org/educators/20100817affordabilitymeasures.pdf

[9] Deferments and forbearances are temporary suspensions of the obligation to make payments on a student loan. Interest may continue to accrue during a deferment or forbearance.

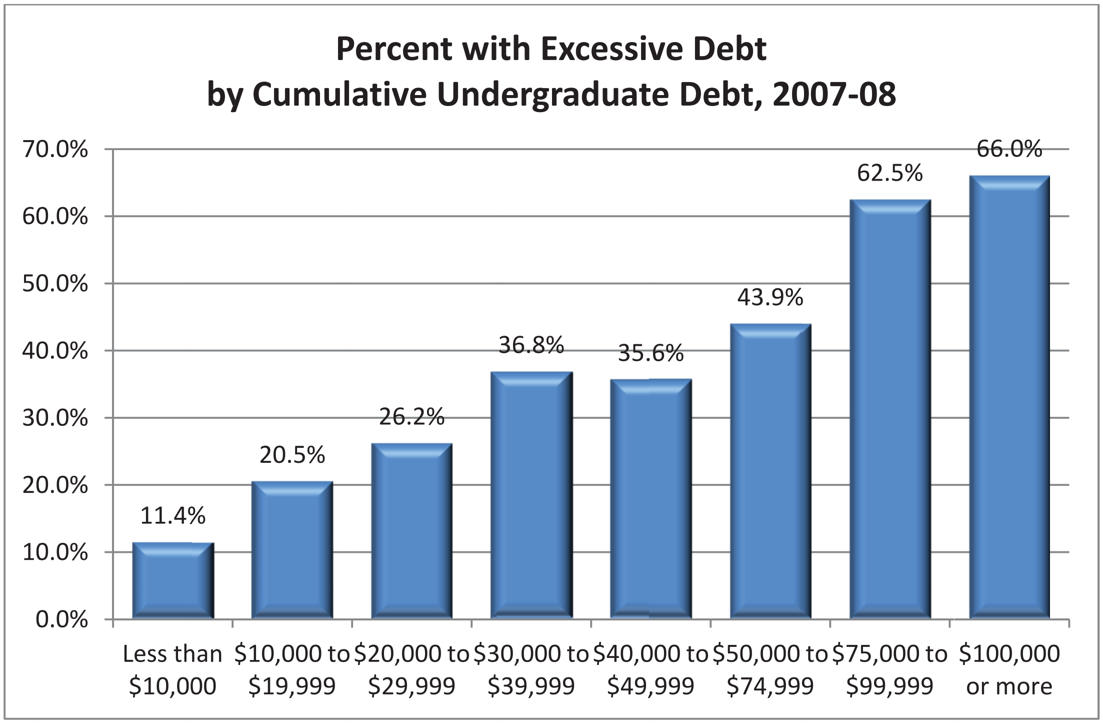
This chart shows that the debt-service-to-income ratio correlates with default rates.



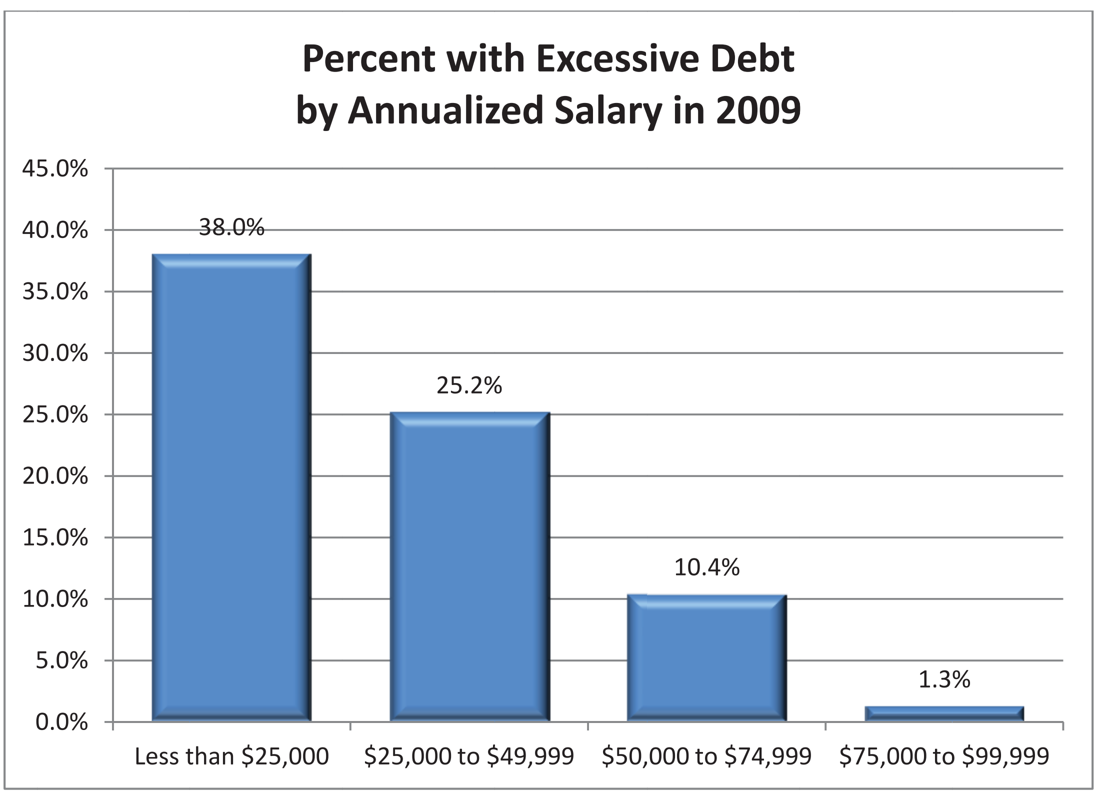
This chart shows that higher cumulative undergraduate debt through 2007-08 correlates with increased percent in default in 2012, based on BB12 data.



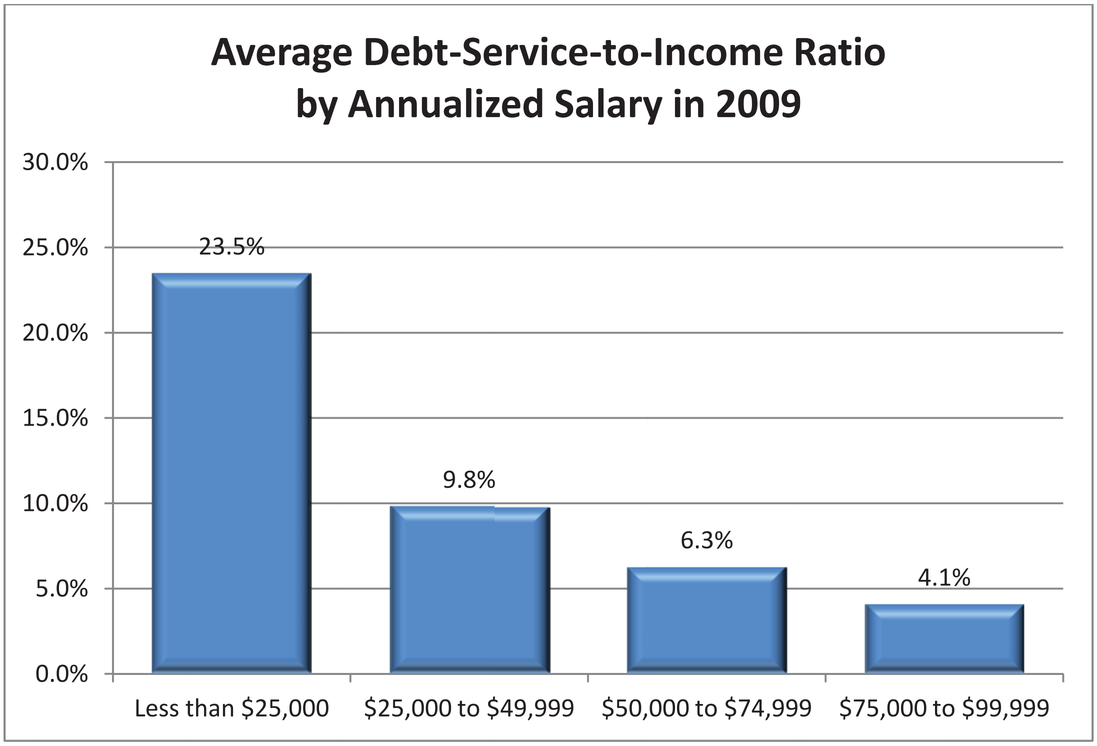
This chart shows that the percentage of Bachelor's degree recipients with excessive debt increases with increasing debt, based on BB12 data.



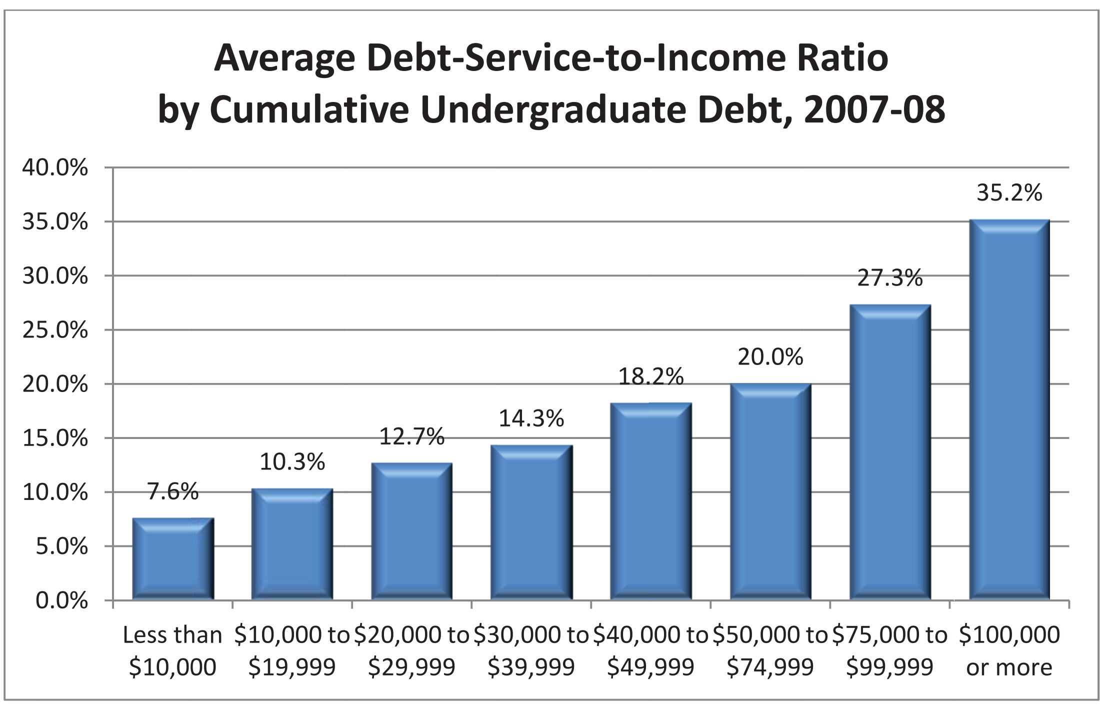
This chart shows that the percentage of Bachelor's degree recipients with excessive debt decreases with increasing income, based on BB12 data.



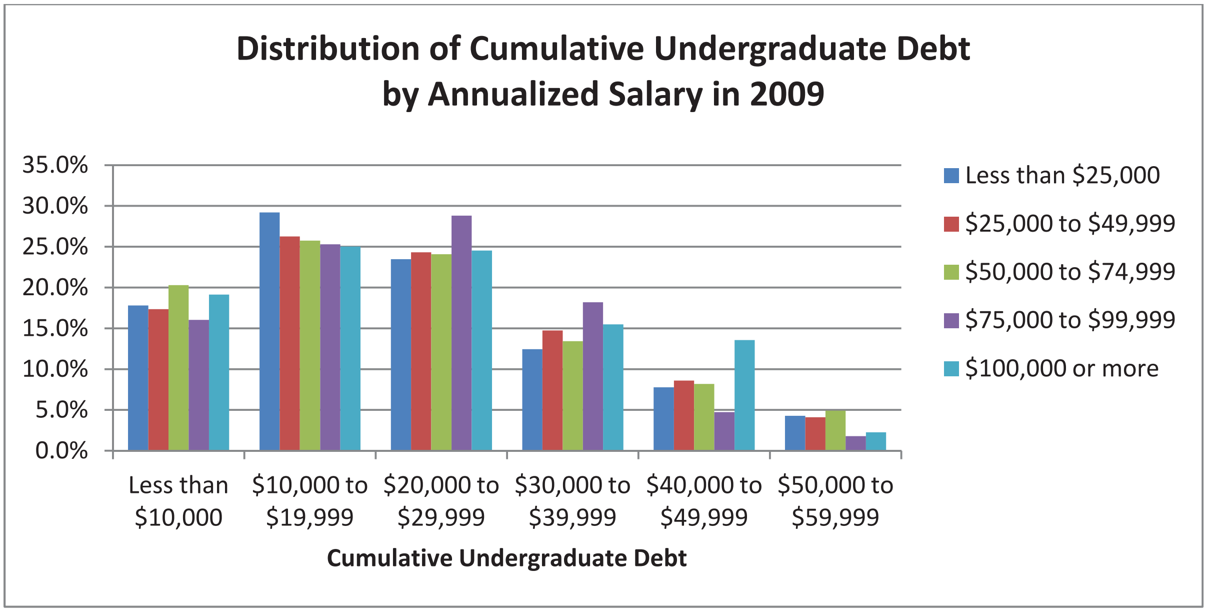
This chart shows that Bachelor's degree recipients with higher annualized salaries have lower debt-service-to-income ratios, based on BB12 data.



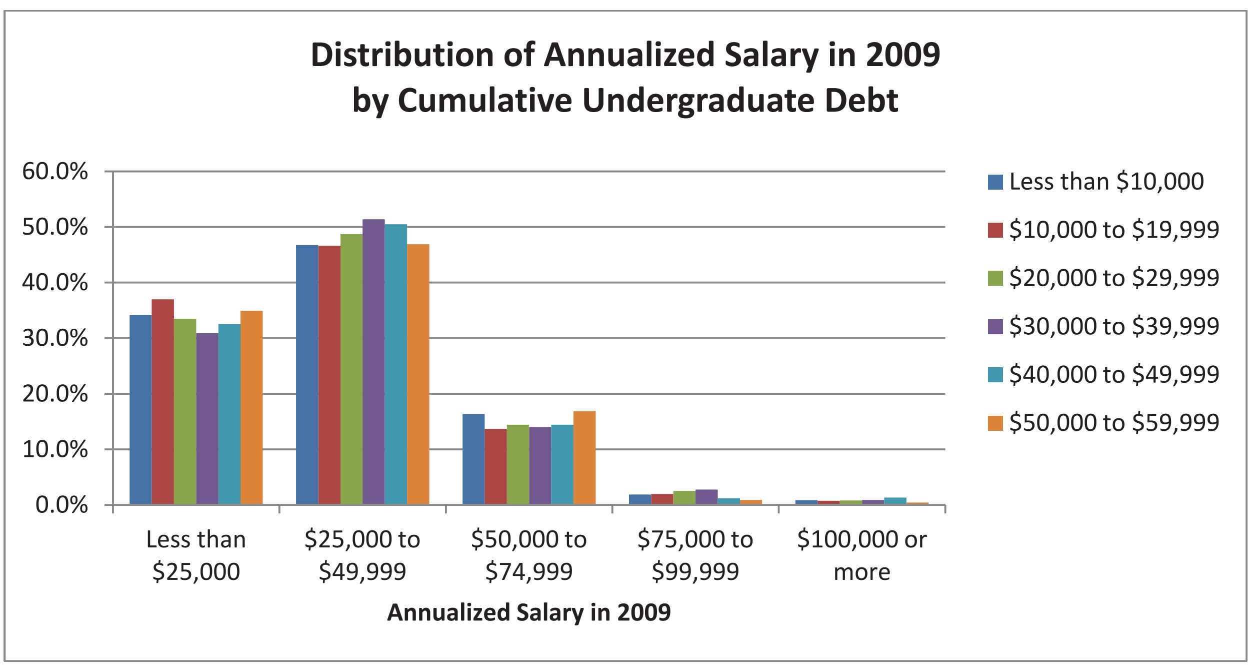
This chart shows that Bachelor's degree recipients with higher cumulative undergraduate debt have higher debt-service-to-income ratios, based on BB12 data.



This chart shows that the distribution of debt is similar across income strata, so it is unlikely for borrowers with low debt to also have much lower income, thereby, yielding higher debt-service-to-income ratios. So, even if there is a minimum income threshold required for basic living expenses, it is unlikely to cause differences in ability to repay student loan debt for borrowers with low cumulative undergraduate debt.



This chart is similar, but shows the distribution of annualized salary in 2009 by cumulative undergraduate debt. It shows that low-income graduates aren't any more or less likely to have lower cumulative undergraduate debt.



Perhaps, the results found in other studies depend more on college completion than the amount of student loan debt. After all, students who drop out of college tend to have less student loan debt than students who graduate because they are enrolled for fewer payment periods. Thus, the amount of debt may be a dependent variable and not an independent variable, influenced by college completion as a confounding factor.

Recommendations

It is increasingly important to understand the consequences of excessive student loan debt because of the increasing prevalence of student loan debt.

This paper discusses excessive student loan debt by Bachelor's degree recipients only, due to the limitations of available data. It does not report on excessive debt by recipients of other degrees, such as Associate's degrees, Certificates and more advanced degrees. It also does not report on excessive debt owed by students who drop out of college. It does not report on other reasons why students might fail to repay their student loans, such as dissatisfaction with the quality of their education.

> **Recommendation:** The U.S. Department of Education should initiate a study of the consequences of excessive student loan debt. This study can be implemented by tracking outcomes for all degree levels and for non-completers in a manner similar to that of the Baccalaureate & Beyond (B&B) longitudinal study, namely as a follow-up to a subset of participants in the quadrennial National Postsecondary Student Aid Study (NPSAS). Congress should provide sufficient funding for this study to ensure that it occurs. Without funding, there is no guarantee that this study will be implemented, even if mandated by Congress.

Although the 2009 follow-up to the 2003-04 Beginning Postsecondary Students longitudinal study (BPS:04/09) may be used to calculate the percentage of college graduates with Associate's degrees and Certificates who have excessive debt, the data is not comparable with the data used in this paper from the Baccalaureate & Beyond (B&B) study for Bachelor's degree recipients. The B&B study provides income data one year after degree attainment. The BPS study provides income data income data in 2009 for cumulative degree attainment during the prior six years. Even if one restricts the degree attainment to students who received a degree in 2007-08, the BPS study still involves an additional restriction to students who first enrolled in 2003-04. The BPS study also does not address whether graduate and professional school students are graduating with excessive student loan debt. Thus, the data in this table is at best suggestive.

BPS:04/09 Cumulative Persistence and Degree Attainment as of 2008-09	Percent with Excessive Debt	Percent of Borrowers with Excessive Debt
Attained Bachelor's Degree	15.6%	24.4%
Attained Associate's Degree	5.2%	8.9%
Attained Certificate	2.8%	4.7%
No Degree, Still Enrolled	2.4%	5.3%
No Degree, Left without Return	4.5%	9.5%

Colleges often refer to student loans as a form of financial aid, arguing that student loans make college more affordable. Student loans delay the repayment obligation, but do not reduce or eliminate it. But, despite widespread claims that student loans make college more affordable, few, if any, colleges track whether their students are graduating with affordable debt. Monitoring long-term trends is necessary for anticipating and identifying problems when they occur. If too many students are graduating with excessive debt, it can affect the college's reputation. It can also have an impact on charitable contributions to the college. Increasing awareness is the first step in exercising restraint.

Recommendation: Each college and university should annually track the percentage of students graduating with excessive debt. The data should be disaggregated by degree level.

Recommendation: Alternately, the U.S. Department of Education could track the percentage of students graduating with excessive debt for each college and university. This will require tracking of private student loans in addition to federal student loans. It will also require an approach that protects the privacy of individual student data, especially data concerning income. Perhaps, it could be implemented in a manner similar to the one used for the gainful employment regulations.

Recommendation: Colleges and universities should include a discussion of excessive debt and the consequences of borrowing too much in their loan counseling programs. Students who are predicted to graduate with excessive debt based on borrowing patterns and academic major should be targeted for more aggressive loan counseling and financial literacy training.

Recommendation: Financial aid award letters should be standardized to clarify distinctions between loans and grants. Increasing awareness of debt is the first step toward exercising restraint. The financial aid award letters should include an "excessive debt alert" for students who are predicted to graduate with excessive debt based on past borrowing patterns.