NEW AMERICA

EDUCATION POLICY

FEDERAL EDUCATION BUDGET PROJECT

JASON DELISLE

SHIFTING BURDENS

How Changes in Financial Aid Affected What Students and Families Paid for College from 1996 to 2012

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About the Author

Jason Delisle is the Director of the Federal Education Budget Project, which is part of the Education Policy Program at New America. The overarching mission of the project is to improve the quality of public information on federal funding for education and to support well-targeted federal education policies. Delisle is a leading expert on the federal student loan program and federal financing for higher education. His work has appeared in a number of national publications, including the *Washington Post* and the *Wall Street Journal*. Delisle and his work have been featured on numerous national television and radio programs, including National Public Radio, Fox Business News and PBS's NewsHour. Delisle has provided expert testimony regarding the federal student loan program before the U.S. Congress and in federal court.

Before joining New America in 2007, Delisle was a senior analyst on the Republican staff of the U.S. Senate Budget Committee, where he played a key role in developing education legislation. Prior to that position, he served as a legislative aide in the office of Rep. Thomas Petri (R-WI). Delisle holds a master's degree in public policy from George Washington University and a bachelor's degree from Lawrence University in Appleton, Wisconsin.

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INTRODUCTION

Anyone who has received a college financial aid award letter knows how complicated and opaque America's system of higher education finance is. Families only have a sense of what college actually costs after factoring in grants, scholarships, tuition discounts, and tax benefits. Policymakers also have limited information about how the myriad sources of college financing all fit together. The best analyses available do not reveal how much different types of students receive from the variety of financing sources because these studies use only high-level statistics drawn from budget data reported by states, the federal government, and colleges.

In this paper we use a less common approach to assessing the various sources of college financing. This approach is both comprehensive and detailed enough to examine how different categories of students pay for school. We model our approach on one used by the Congressional Budget Office (CBO) in 2004, using data from the National Postsecondary Student Aid Study (NPSAS) to gather information about college financing at the student level.[1] It is a bottom-up approach to assessing college financing, using data on individual students, rather than the more common top-down approach that uses data on colleges or government spending. We expand on the Congressional Budget Office study with a time series element, using five NPSAS datasets beginning with the 1995–96 academic year and ending with the most recent 2011–12 survey, to capture historic changes in higher education in the U.S.

SUMMARY OF KEY FINDINGS

Changes in college prices varied dramatically by sector, family income, and dependency status.

Broad trends in college financing since 1996 have not affected students from all families the same. In particular, students at community colleges and independent students at public four-year colleges have not seen an increase in costs over the time period analyzed. And while dependent students at public four-year colleges paid an increasing share of college costs, those increases were correlated with family income: lower-income students saw smaller increases and higher-income students saw the largest increases. Those trends are linked to our other findings related to growth in federal aid and changes to state and local general subsidies at public colleges.

Reductions in state funding were larger for students from wealthy families than for their low-income peers.

General subsidies provided by state and local governments to public colleges declined on a per-student basis over the period we studied, which is a well-known trend, but our methodology reveals that at public four-year colleges, higher-income families saw the biggest drop in the share of college costs that general subsidies covered while lower-income students saw the smallest reduction. We also find that independent students saw a smaller decline in general subsidies than dependent students, even those in the lowest income category. Because general subsidies are provided directly to colleges usually without regard to student demographics, and because students receive the subsidies indirectly through lower tuition, the colleges that students choose to attend determines the amount of general subsidy that they receive, not their individual circumstances.

For low-income families and independent students, increases in federal aid nearly or completely offset declines in state and local general subsidies.

Federal aid significantly increased over the time period we studied and the share of college costs it covered rose markedly, driven by larger grants and tuition tax benefits. (We include federal student loans in our analysis, but treat them mostly as an obligation of the student and family, not federal aid.) Those increases partially offset declines in state and local general subsidies, and for some categories of students, such as those at community colleges and independent students at public four-year colleges, increases in federal aid were large enough to fully offset declines in other aid. The share of costs that federal financing covered at private four-year colleges increased between 1996 and 2004 but then was flat. Unlike at public colleges, where federal aid increased consistently

as a share of costs over the entire period of our analysis, costs at private colleges appear to have grown at a rate that absorbed increases in federal aid in those latter years.

Aid provided directly to students played a much larger role in college financing in 2012 than in 1996.

The share of costs that direct aid, such as grants and tax benefits, covered for students at public four-year colleges increased significantly between 1996 and 2012. However, those increases were not enough to fully offset declines in other aid, mainly state and local general subsidies, leaving students and families to pay a slightly larger share of costs over the time period studied. Students from families in the $30,001–$65,000 income group at public four-year colleges saw the largest increases in direct aid.

Across the board, students and their parents borrowed more to pay for college between 1996 and 2012, paying a smaller share of costs out-of-pocket.

Students and families relied heavily on debt to finance increases in the share of college costs that they paid over the period we studied. At public four-year colleges they even reduced the amount they paid out-of-pocket in absolute inflation-adjusted dollars. Even in cases where students have not seen higher costs, such as community colleges, they still increased their use of debt relative to out-of-pocket spending. Families increased their use of the federal Parent PLUS loan program significantly between 2008 and 2012 at both public and private four-year colleges. Across almost all income groups of dependent students, parent borrowing increased more than student borrowing between those years.

HOW WE IDENTIFIED AND ASSIGNED SOURCES OF COLLEGE FINANCING

Detailed information about how we calculate and estimate sources of college financing is provided at the end of this paper, but we include a basic overview here. First, we calculate the average cost of college for students in a given income group and school type, which includes tuition and living costs reported in NPSAS. After identifying and factoring in all the sources of financial aid students received, including tax benefits, we subtract that aid from the tuition charged at the colleges they attended and the living expenses they incurred. Remaining amounts are classified as costs students and families financed out-of-pocket. We include student loans in that amount, with an exception discussed

below. This is effectively a way of determining the "net price" that students and families paid relative to the total cost of the education.

We then assign all sources of student aid, plus any amount that students and families paid either partially or completely, to one of the following categories: the student and family; state or local government; the federal government; or the institution of higher education. This step is straightforward in most cases. For example, the full value of a state grant that a student receives is assigned to the state government source. The approach is more complicated for student loans. We assign amounts borrowed to what the student and family pay for college, but if the loan carries terms that are better than what the recipient could secure in the private market, we assign a "subsidy" portion to the lender. For example, we assign the amount of a federal student loan mostly to the student and family, with only a portion assigned to the federal government to reflect the subsidy. We follow the Congressional Budget Office's fair-value approach to calculating the federal subsidy, which shows larger subsidies compared with alternative methods but does not change the direction or magnitude of trends in federal financing over time in our analysis.[2]

Lastly, we convert each component into a percentage of the total cost of the education, showing *relative shares* financed by each source. That is, we show the share of costs borne by each actor. It is important to keep in mind that even if one actor bears a smaller share of costs over time, the *nominal* amount could still have increased, just not enough to keep pace with rising college costs. That is why we also report nominal figures using constant 2012 dollars to provide additional context throughout this paper.

Advantages of a Bottom-Up Analysis

Previous studies that assess sources of college financing rely on revenue and spending data that make colleges or governments the unit of analysis. We use nationally-representative survey data on individual undergraduate students and families for this information instead. That allows us to examine financing trends by family income, a student's dependency status, and school type (i.e., community college, four-year public), which is important because student aid and college prices can vary greatly among those categories—sometimes as an intention of public policy and other times as an unintended consequence. Studies that rely on revenue data usually cannot provide that level of detail, making it appear as if all students are affected equally by the same broad trends. We break families into four income groups for our analysis: those earning, in 2012 dollars, $30,000 or less; those earning between $30,001 and $65,000; those earning between $65,001 and $106,000; and families earning over $106,000. These are approximately the income quartiles for full-time dependent students in the 2012 NPSAS survey.

Using student- and family-level data from NPSAS also allows us to see how the colleges that students choose to attend affects financing trends. For example, total college costs will be lower for independent students who select low-cost, in-state public institutions than for dependent students who choose expensive out-of-state flagship institutions.

> **Focusing on the share of costs each financing source covers can better reveal which sources are growing faster than others or whether costs are growing at the same pace as financial aid.**

We also focus our analysis on the share of college costs each financing source covers rather than absolute amounts. Measuring changes in college financing in absolute dollars can obscure certain trends, since college costs, student aid, and tuition can all rise in tandem. Focusing on the share of costs each financing source covers can better reveal which sources are growing faster than others or whether costs are growing at the same pace as financial aid.

Limitations of this Analysis

While an appendix at the end of this paper lays out key assumptions and decisions we made in building our analysis, readers should bear in mind a few overarching limitations. Our analysis includes only full-time students (degree-seeking and non-degree-seeking).[3] Students attending at other levels of intensity present methodological challenges for our approach. Our analysis is based on national averages, not total revenue or total student aid spending. National averages can obscure important college cost and financing differences between states. We also do not break out results for independent students by family income due to sample size limitations and because these students' incomes have too little variation. Most of these students fall inside our lowest income group or have incomes just above the cutoff. Since NPSAS is a quadrennial survey, our analysis is based only on data from 1996, 2000, 2004, 2008, and 2012, but not the intervening years. We chose 1996 as the first year because NPSAS data from earlier years are more limited and less consistent with recent data collection. Lastly, we exclude for-profit colleges from this paper to keep the size of the analysis manageable, although we plan to release a follow-up study for students at those colleges at a later date.

While we discuss our findings based on changes from 1996 to 2012, in many instances the figures for 1996 do not represent the lowest or the highest point in the series. That can make the trend seem larger or smaller than it is if the intervening years are factored in. For example, the state and local general subsidies at public four-year colleges *increased* between 1996 and 2000. We include detailed charts that include statistics for each of the years in our findings so that readers can make their own comparisons. Furthermore, we leave out of our discussion cases where the change over the period analyzed is influenced more by that start year than the overall trend.

Information on what colleges spend to provide the education students receive is a key part of our analysis, but it is not included in NPSAS so we cannot measure those costs at the student level like we do for all the other factors in our study. We also use it to impute the general subsidies that states provide to public colleges, which is often the largest source of aid students receive. Instead of NPSAS, we use data from the Delta Cost Project to gauge what colleges report as the cost of providing the education.[4] However, that information can only be broken down by school type, not any of the other categories in our analysis, such as family income.

CHANGES IN THE SHARE FAMILIES PAID FOR COLLEGE VARIED BY INCOME AND COLLEGE TYPE

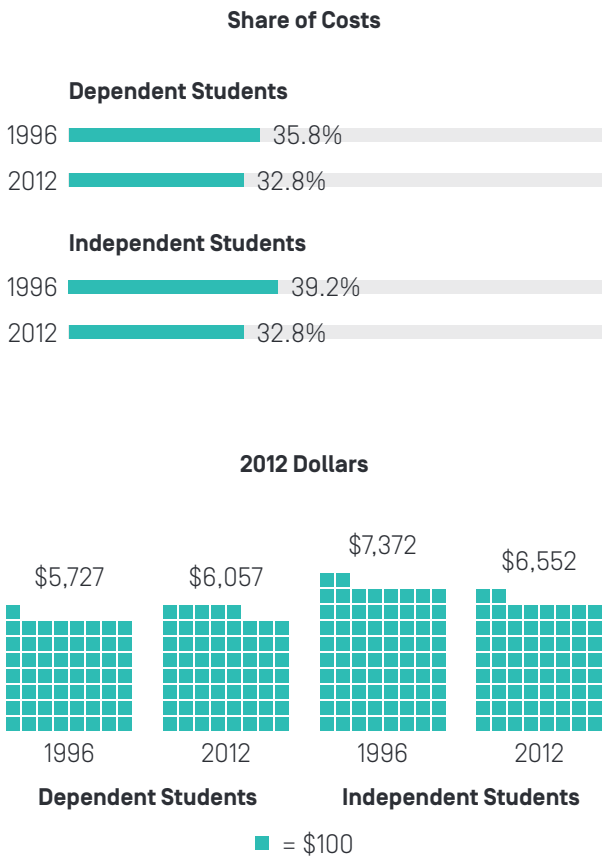
In this first section we look at the share of college costs students and families paid over the time period we studied, 1996 to 2012.[5] While we find that generally students and families paid an increasing share of college costs, we uncover some major exceptions to that trend. We also find that increases in the share of college costs that students and families paid varied significantly among income groups. Subsequent sections of this paper will examine trends in the financing sources other than amounts paid by students and families.

Community Colleges

Students and families paid a slightly smaller share of community college costs in 2012 than in 1996. This is the case for both dependent and independent students. Dependent students at community colleges paid 35.8 percent of costs, or $5,727 per year of education in 1996. In 2012, their share was lower, at 32.8 percent of costs, but in absolute dollars it was higher by $330. Independent students saw declines in both the share and absolute amounts they paid. In 2012, they paid 32.8 percent of costs, or $6,552, well below the 39.2 percent of costs ($7,372) that they paid in 1996.[6]

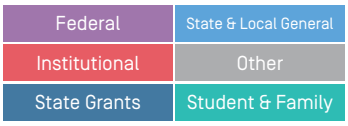
Note that we measure the cost of college by including tuition and allowance for living expenses

Student & Family Share of Costs at Community Colleges

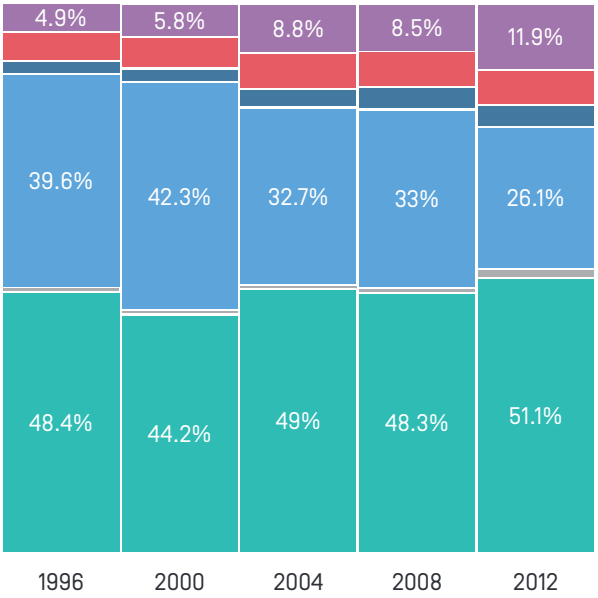


Financing College Costs

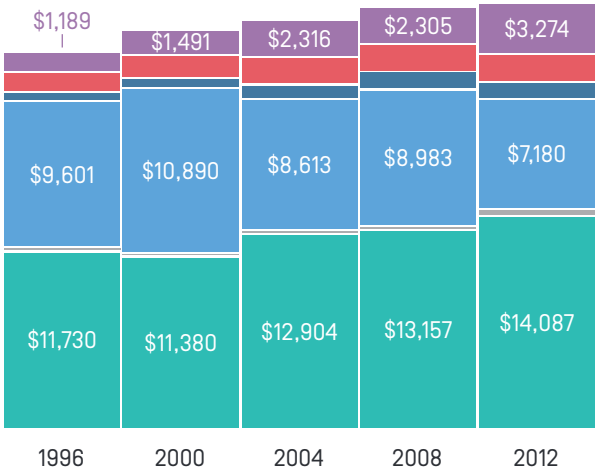
Dependent Students at Public Four-Year Colleges



Share of Costs

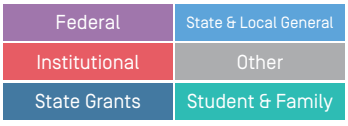


2012 Dollars

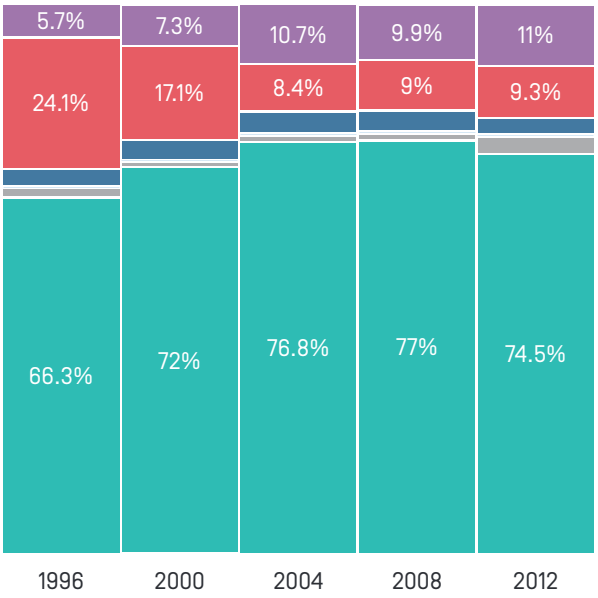


Financing College Costs

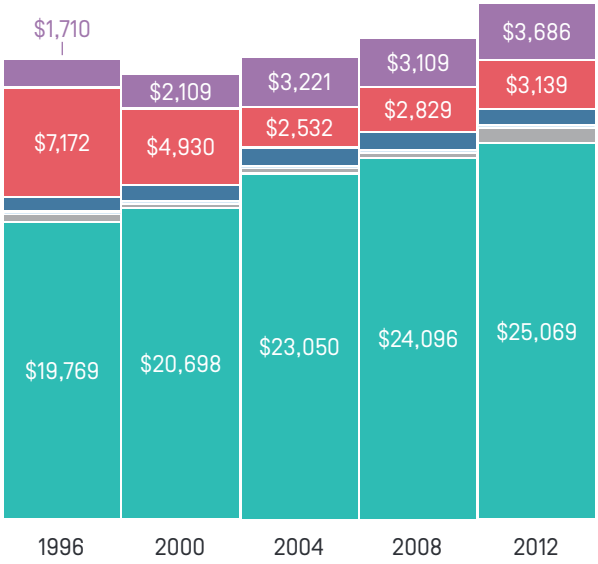
Dependent Students at Private Four-Year Colleges



Share of Costs



2012 Dollars



as reported in the NPSAS data. Students attending community colleges generally receive enough grant aid to cover much, if not all, of their tuition and fees. Assuming they apply that aid to tuition first, then much of what they pay as we show it in our study is for living expenses that they incur while enrolled, such as housing and food. For example, the average non-tuition costs reported in NPSAS for dependent students attending community college in 2012 is $9,229. We include students living on campus, off campus, and at home with family in our analysis.

Public Four-Year Colleges

Like independent students at community colleges, we find that independent students at public four-year colleges paid a smaller share of costs over the time period analyzed. In 2012, independent students at public four-year colleges paid 37.4 percent of costs, below the 41.6 percent they paid in 1996. In absolute dollars, they paid $10,016 in 2012, which is below the $10,849 they paid in 1996. That finding contradicts the view that prices at public four-year colleges have risen significantly for all students.

In contrast, dependent students at public four-year colleges paid a greater share of college costs in 2012 than in 1996, but the degree of those increases was correlated with family income. Families in the highest income category (household income greater than $106,000) paid 64.8 percent of costs in 2012, which is 3.3 percentage points higher than what they paid in 1996. In constant 2012 dollars, that equates to $3,045 more per year of education, for a total yearly cost of $18,350. The share of costs families in the lowest income group (incomes of $30,000 or less) paid increased by 0.4 percentage points, to 33.1 percent of costs at public four-year colleges in 2012. In dollar terms, that is an increase of $1,206 in annual costs, bringing what they paid for a year of education to $8,938.

Private Four-Year Colleges

At private four-year colleges the share of costs that students and families paid rose for all income groups, but much of that increase occurred before 2004. Between that year and 2012 the share they paid remained mostly unchanged, and declined slightly in 2012. When measured in absolute dollars, we find that the costs paid by students and families were, however, rising between 2004 and 2012, after adjusting for inflation. That tells us that costs, student aid, and the prices students paid were all rising at the same pace between 2004 and 2012, such that their relative shares were roughly constant.

Breaking those trends out by family income reveals an important exception. Students from the second-highest income group (household income $65,001 to $106,000) saw a constant increase in the share of costs that they paid over the entire time period we examined. Among all income groups—at any school type—they experienced the largest increase in the share of college costs that they paid. It jumped to 75.7 percent, compared with 66.3 percent in 1996. That is $5,719 more in inflation-adjusted costs, for a total of $25,514 for one year of education in 2012.

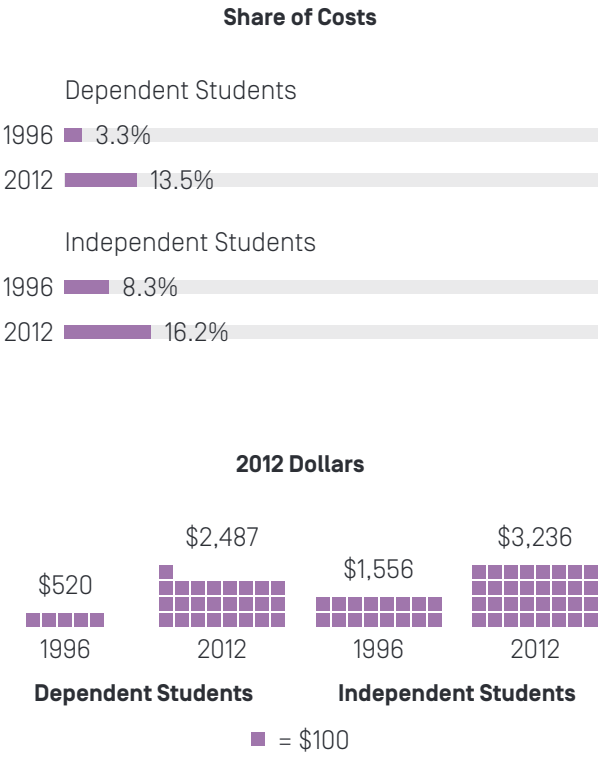
The highest income group at private four-year colleges saw little increase in the share of costs that families paid, mainly because they were always paying a near-total share of costs. However, the amount that they paid measured in absolute, inflation-adjusted dollars rose consistently each year. In other words, the total cost of their educations and the amount they paid toward it increased at similar rates. These students do receive substantial amounts of institutional grants through tuition discounts and merit aid, over $9,000 on average in 2012, but our model suggests that the aid is an accounting illusion. The schools charge sticker prices high enough that even after discounts for high-income students, the prices that families pay is about equal to the full cost of the education. Alternatively, the data may understate average educational costs at the institutions students from high-income families attend. These data are not broken out by family income and therefore show educational costs at all private four-year colleges, not only those that higher-income students attend.

THE SHARE OF COLLEGE COSTS THAT FEDERAL AID COVERED INCREASED SIGNIFICANTLY

The share of college costs that the federal government financed rose significantly and consistently over the time period we studied for nearly all the income groups and school types we analyzed. That trend was driven mainly by steady increases in grant aid for lower income students, but the advent of tuition tax benefits in 1997 and their continued growth across all income groups also contributed. Student loans did not contribute to that trend under our analysis even though students borrowed more over time. Our analysis counts only the subsidy on the loan as a source of federal aid, with most of the debt treated as an obligation of the student and family.

By that method, the subsidy on federal loans was fairly constant during the time period analyzed, except for the final year of our analysis, 2012, when they declined sharply for two categories of loans, Unsubsidized Stafford and Parent PLUS. Interest rates on federal loans were high relative to what the program historically charged that year. The rates were also high enough on most federal loans so as to provide only a small benefit relative to loans available in the private market.[7] The exception is a subset of federal student loans—Subsidized Stafford loans—available to students who meet a means

Federal Share of Costs at Community Colleges



test. Congress cut the interest rate on those loans between 2007 and 2012, maintaining the level of benefits the loans provided as interest rates in the market fell during that time. Our analysis takes that effect into account. Note that most students eligible for Subsidized Stafford loans also take out Unsubsidized Stafford loans.

Community Colleges

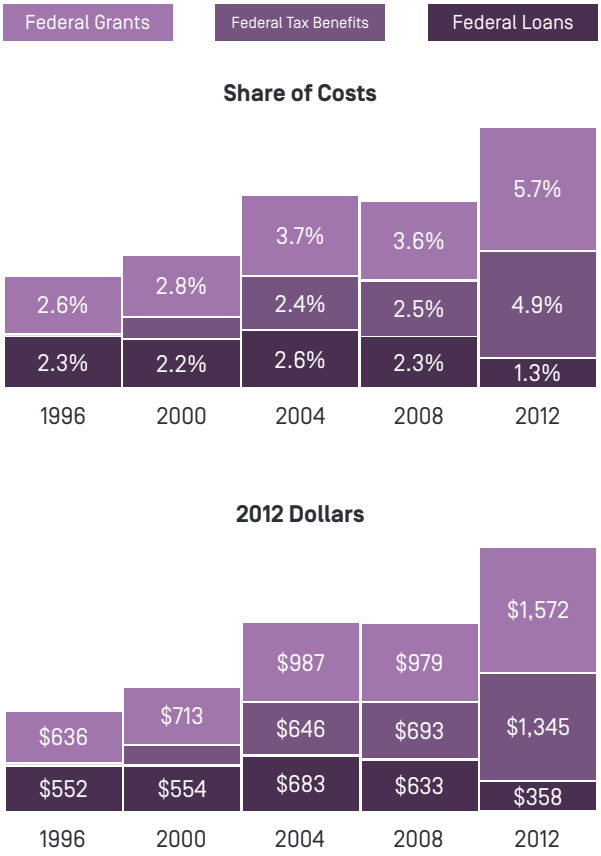
The increase in the federal share of college financing is most significant among students attending community college. The increases were large enough to offset declines in state and local general subsidies and it is why the amounts that students and families paid to attend these colleges have not increased over the time period in our study. The federal government covered 13.5 percent of community college costs for dependent students in 2012, or $2,487 per year. That is up from just 3.3 percent, or $520, in 1996 (in 2012 dollars), with the largest increase occurring between 2008 and 2012. For dependent students from families earning $30,000 or less, the federal share reached a high of 20.7 percent of costs in 2012, twice the share it covered in 1996. Among independent students, the federal government covered 16.2 percent of costs or $3,236 per year in 2012, up from 8.3 percent, or $1,556, in 1996.

Public Four-Year Colleges

The share of costs that federal dollars covered at public four-year colleges increased significantly and steadily over time. For low-income students, Pell Grants were the main contributor to the trend; for higher-income students, the advent and continued expansion of tuition tax benefits, like the Lifetime Learning Tax Credit and the American Opportunity Tax Credit, contributed most to the increase.

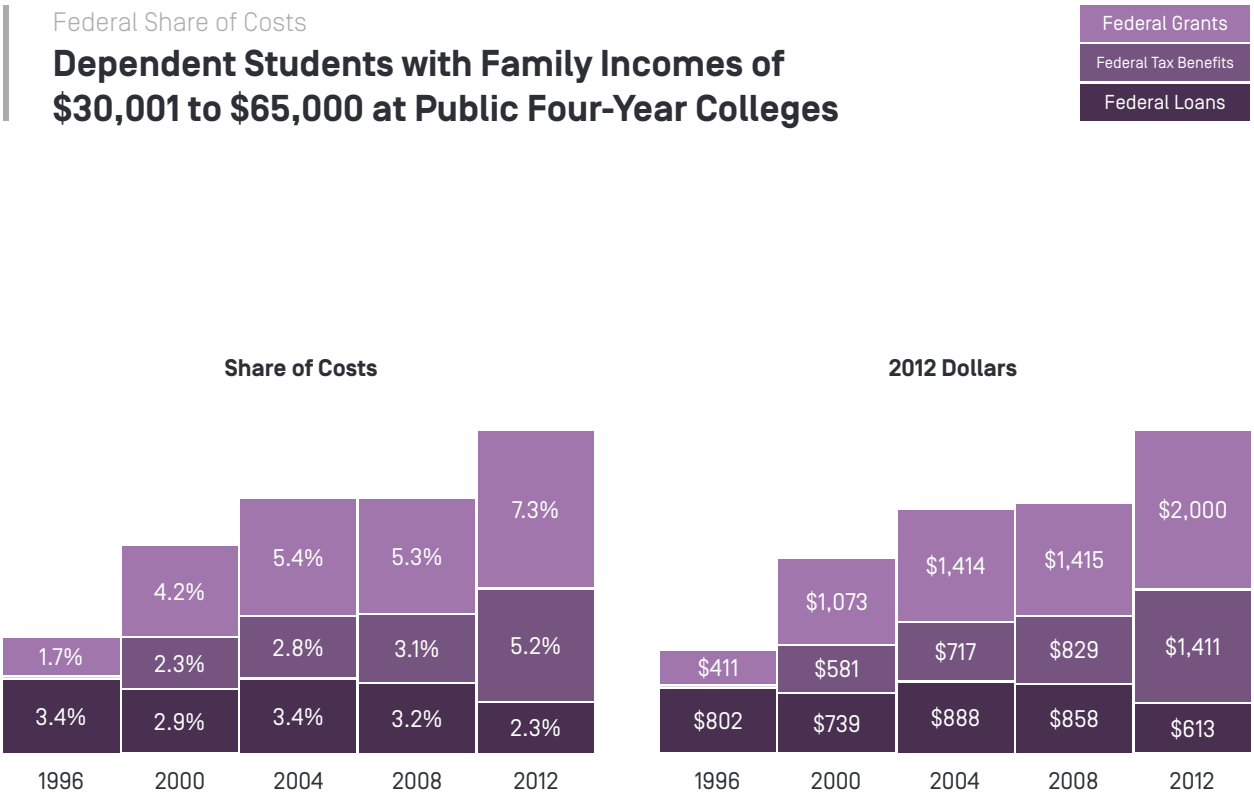
For dependent students attending public four-year colleges, federal aid rose from a 4.9 percent to 11.9 percent share of college costs between 1996 and 2012. Notably, tuition tax benefits, which did not exist in 1996, grew to cover almost 5 percent of college costs by 2012. Breaking those trends down by family income shows that the lowest-income families saw federal aid rise to cover over one-fifth of costs in 2012, from 12.9 percent in 1996, which was due almost entirely to more generous Pell Grants. The highest income group received federal aid that covered less than one percent of costs in 1996, but by 2012 it had reached 5.9 percent, due entirely to increases in tuition tax benefits. Meanwhile, the share of costs covered by subsidies on federal student loans did not increase over that time period for any income group. Loan subsidies covered about 2.4 percent of costs consistently between 1996 and 2008 due to interest rate policies in place during that time, but then declined to 1.3 percent of costs in 2012.

Federal Share of Costs for Dependent Students at Public Four-Year Colleges



Federal Share of Costs

Dependent Students with Family Incomes of $30,001 to $65,000 at Public Four-Year Colleges



Families in the $30,001–$65,000 income group saw some of the largest increases in federal aid. The share of costs it covered nearly tripled as those families benefited from growth in federal grants and tuition tax benefits. Federal aid covered 5.1 percent of costs at public four-year colleges for those families in 1996, or $1,213 in constant 2012 dollars. By 2012 it covered 14.8 percent, or $4,024. Broader eligibility and award rules for federal Pell Grants that took effect between 2008 and 2012 made many more families in this income group eligible for grants and increased the size of awards for those already eligible.[8] Changes that occurred between 1996 and 2000 also stand out as equally significant, with the average federal grant increasing by over $600 in 2012 dollars during that time.

Private Four-Year Colleges

The federal share of financing at private four-year colleges shows a different trend from the steady growth at public two- and four-year colleges. After increasing from 1996 to 2004, federal aid as a share of total costs at private four-year colleges remained mostly flat from 2004 to 2012. That is mainly because costs at these institutions grew at a rate that absorbed increases in federal aid. Reductions in federal student loan benefits between 2008 and 2012 also held back overall growth in federal aid at private four-year colleges.

As mentioned earlier, the subsidy on most federal loans (Unsubsidized Stafford and Parent PLUS) reached a low in 2012 due to the interest rate policy in place at that time (Subsidized Stafford loans were an exception to that trend because lawmakers cut interest rates on those loans). For students attending private four-year colleges, the reduction in loan subsidies between 2008 and 2012 was enough to almost completely offset historic increases in federal grants and tuition tax benefits. Because students attending private four-year colleges borrow considerably more, about twice as much as public-school students, this trend is more pronounced for students at private four-year colleges but not their

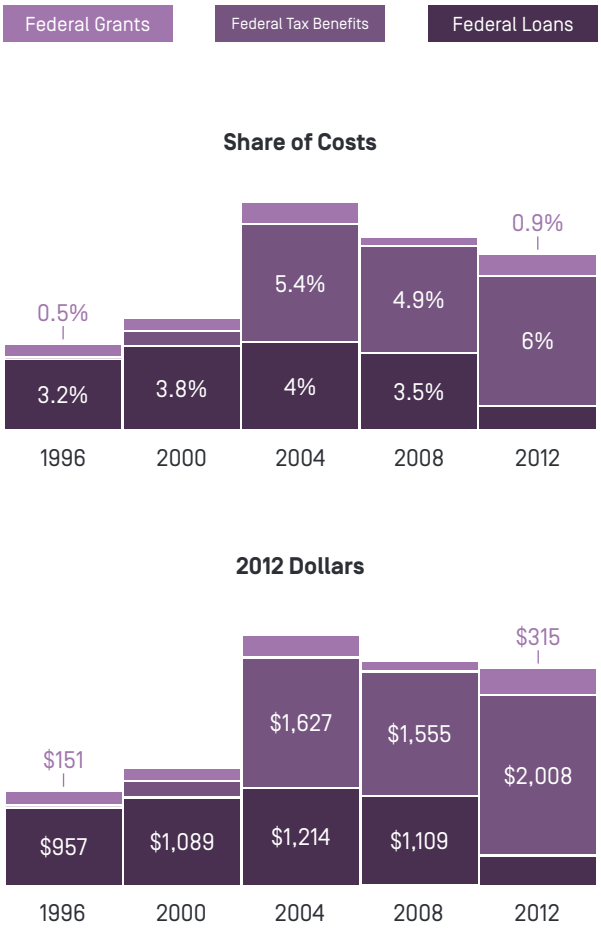
public college peers, who still saw overall federal aid increase.

Increases in borrowing through the federal Parent PLUS program, not student borrowing, drove reductions in federal loan benefits at private four-year colleges between 2008 and 2012. Parent PLUS loans are available to all parents of dependent undergraduates who meet minimal creditworthiness standards. Unlike federal student loans, which have annual borrowing limits, parents can finance the full price that a school charges with PLUS loans.[9] According to the methodology used in our analysis, the federal government is expected to earn a positive return on PLUS loans issued in 2012, mainly because the interest rate was approximately 9 percent, which is comparable to, or even higher than, what families could secure in the private market.[10] We show the government's expected return on PLUS loans issued in 2012 as a transfer from the family to the federal government, which effectively reduces the share of college costs that the federal government covers and increases the share the family covers.

By taking out more PLUS loans between 2008 and 2012, parents of students at private four-year colleges offset increases in other federal aid that they received during that time. That dynamic affected families in the $65,001–$106,000 income group most. They used Parent PLUS loans to finance an average of $3,922 in 2012, up from an inflation-adjusted $2,198 in 2008.[11] As a result, they saw their total federal aid *decline* as a share of costs between 2008 and 2012—although it was still higher than the earliest years in our study. They are the only group in our analysis for whom that was the case. While they saw an increase in federal tax benefits between 2008 and 2012, those increases *were more than offset* by the money they transferred back to the federal government by taking out larger Parent PLUS loans.

Federal aid for families in the highest income group grew between 1996 and 2004 with the advent of tuition tax benefits. But despite a further increase in the tax benefits available to this group between 2008 and 2012, when the $2,500 American Opportunity Tax Credit became available, the federal share of financing remained flat in the latter years we analyzed. These families transferred the gains from more generous tax benefits back to the federal government by borrowing more Parent PLUS loans. But unlike the income group just below them, these families did not increase their PLUS loan borrowing enough to reduce their overall federal aid. They also saw much larger increases in federal tax benefits than the other income groups between 2008 and 2012, fully counteracting reduced loan benefits.[12]

Federal Share of Costs for Dependent Students with Family Incomes of $65,001 to $106,000 at Private Four-Year Colleges



REDUCTIONS IN STATE AND LOCAL GENERAL SUBSIDIES VARIED BY FAMILY INCOME AND COLLEGE TYPE

State governments provide direct aid to public colleges to reduce the tuition, fees, and other costs that state residents must pay. We label this source of college financing "state and local general subsidies." In the case of community colleges, the funding may be provided by the state or local government. We include both sources as a combined sum and do not differentiate between the two.

Typically, state and local general subsidies are the largest source of aid students attending public colleges receive, albeit indirectly through tuition prices that are below the cost of the education. State and local governments provide general subsidies to public colleges through a range of different formulas, but those formulas are rarely designed to take into account the demographics of the students who attend each individual public college. The money is effectively a block grant from the state or local government to a public college. It is not aid that flows directly to students, like federal Pell Grants, and therefore does not take into account factors such as family income. While this aid "buys down" the prices students would otherwise pay, the tuition that a public college charges may be set through a separate process, unrelated to the one which policymakers use to allocate general subsidies.

We note that the colleges students choose to attend determines the amount of state and local general subsidy that they receive. Students more likely to

State and local governments provide general subsidies to public colleges through a range of different formulas, but those formulas are rarely designed to take into account the demographics of the students who attend each individual public college.

attend out-of-state institutions typically receive no general subsidy if they pay out-of-state tuition. We include students attending in and out of state in our analysis.

These are all important points to bear in mind as we discuss trends in state and local general subsidies across different categories of students. They provide context for the variation and trends our analysis reveals. The methodology section provides more detail about how we calculate state and local general subsidies.

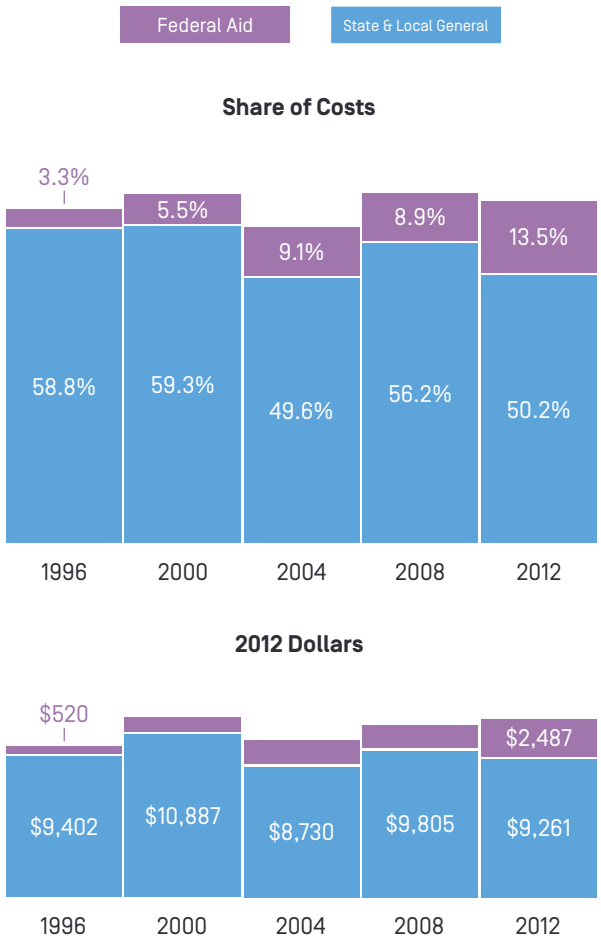
Community Colleges

Per-student, general subsidies for dependent students attending community colleges have indeed declined, although those declines have been much less severe than at public four-year colleges. Meanwhile, increases in federal aid have been large enough to backfill those reductions completely. That is why the share of costs, and absolute dollar amounts, that community college students paid did not increase between 1996 and 2012, despite falling state and local general subsidies.

State and local general subsidies for dependent students attending community college have declined from 58.8 percent of costs, or $9,402, in 1996 to 50.2 percent, or $9,261, in 2012. Meanwhile, federal aid grew from 3.3 percent to 13.5 percent of costs. In constant 2012 dollars, that is about $2,000 more in federal aid per student, and enough to make up for the decline in state and local general subsidies.

The share of community college costs that state and local general subsidies covered for independent students declined by only a small amount over the period we studied. In 2012 state and local general subsidies covered 48.5 percent of costs, below the 50.5 percent of costs that they covered in 1996. But in absolute inflation-adjusted dollars the average subsidy was slightly higher by $182. Because there was so little change in state and local general subsidies, increases in federal aid for this group

Federal Aid and State & Local General Subsidy Share of Costs for Dependent Students at Community Colleges



significantly reduced the share of costs and absolute dollars that these students paid in 2012 compared with 1996. Federal aid covered 16.2 percent of costs in 2012, compared with 8.3 percent in 1996.

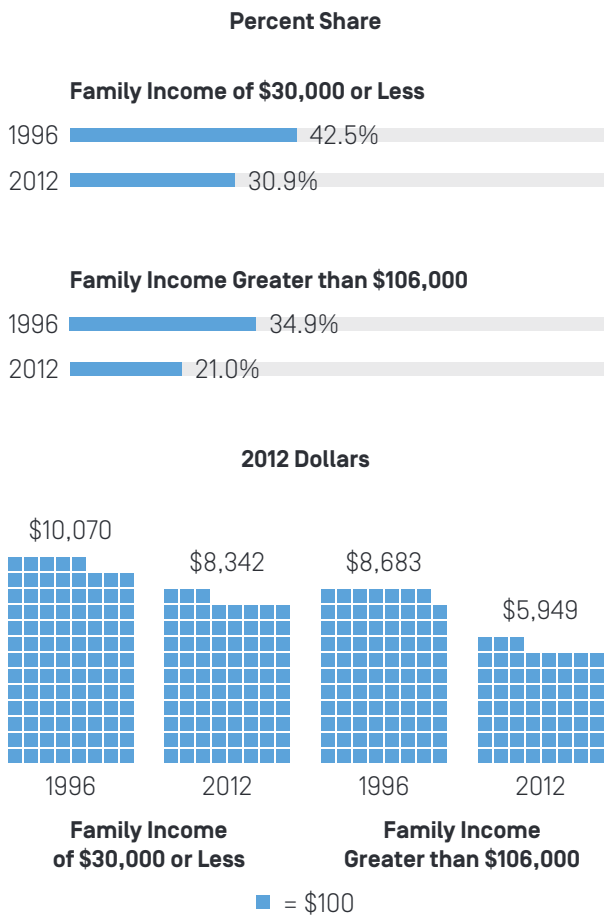
Public Four-Year Colleges

State and local general subsidies were in a clear downward trend at public four-year colleges over the time period we analyze, but there are significant differences in this trend for independent and dependent students, as well as between

dependent students in different income groups. Bear in mind that policymakers usually do not allocate state and local general subsidies to colleges according to student demographics. Therefore, the differences we find are likely due to the choices that students made about which colleges to attend. For example, students who attend less-selective, lower-cost regional colleges would see a smaller decline in their state and local general subsidies if tuition increases at those colleges have been more moderate.

While it is widely known that for dependent students, state and local general subsidies covered a smaller share of college costs in 2012 than in 1996, we break that trend out by income group and find that declines were most severe for the highest-income families, and they have been smallest for lower-income families. This effect is largely absent from discussions about declines in state and local general subsidies and is an important finding.

State & Local General Subsidy Share of Costs for Selected Income Groups at Public Four-Year Colleges



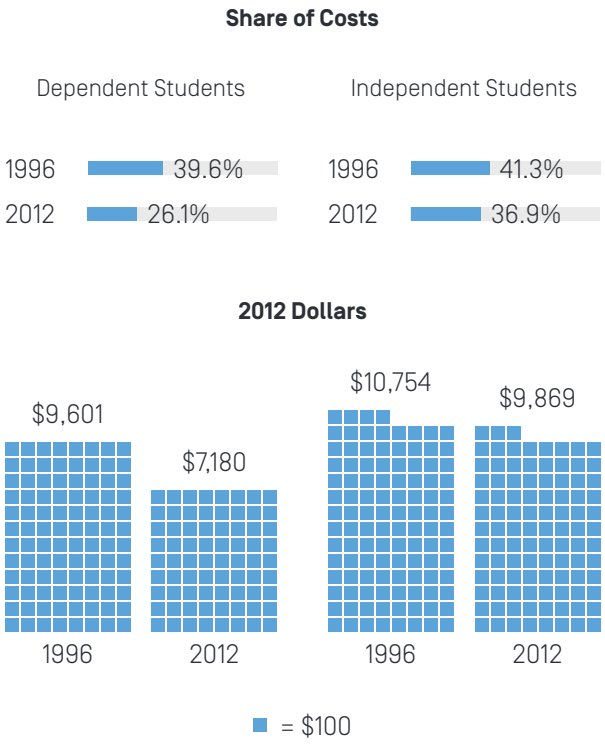
Families in our lowest income group of dependent students saw state and local general subsidies cover an average of 42.5 percent of the annual cost of education in 1996, but in 2012 they covered only 30.9 percent. That is a decline from $10,070 to $8,342 in constant 2012 dollars.

For families earning over $106,000, the decline was much steeper. The average general subsidy in 1996 was 34.9 percent of costs. In 2012, it had fallen to 21.0 percent. In constant 2012 dollars that is a decline from $8,683 to $5,949. In other words, state support for a year of tuition was worth $2,734 less for that group by 2012. For the poorest students, it was worth $1,728 less. The income groups between our lowest and highest categories saw declines in between those two extremes.

For independent students, the overall reduction in state and local general subsidies is considerably smaller than for dependent students in any income group. State general subsidies covered 41.3 percent of college costs in 1996, or $10,754, for independent students. By 2012 the subsidies had dropped to 36.9 percent of costs, or $9,869.

By comparing state and local general subsidy declines with increases in federal aid (which is provided directly to students via grants and tax benefits) we find that students and families attending public four-year colleges did not bear the full increase in college prices that declines in state and local general subsidies would otherwise warrant. This trend speaks to a changing higher education landscape, one where federal dollars increasingly help make up for the declining purchasing power of state and local general subsidies.

State & Local General Subsidy Share of Costs at Public Four-Year Colleges

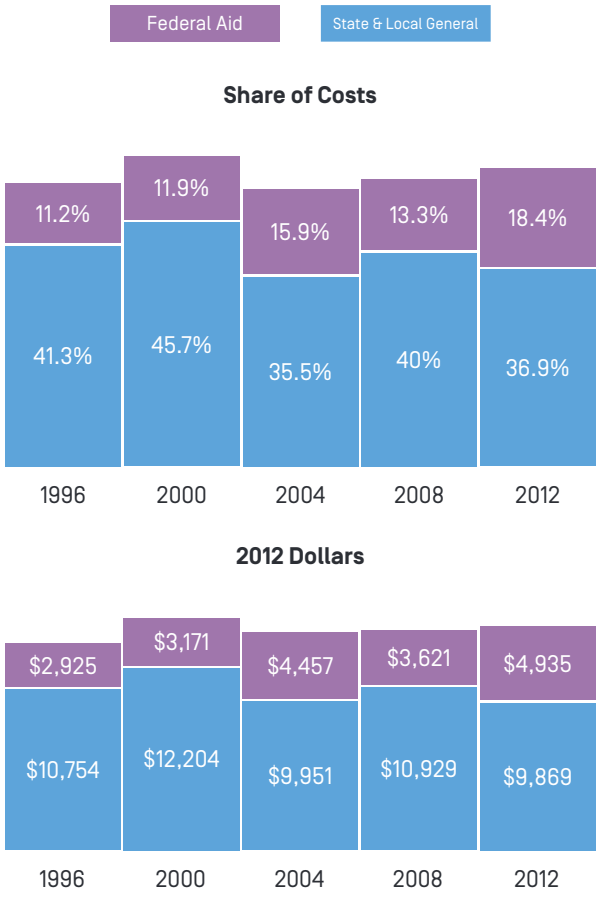


This effect was strongest for independent students, for whom increases in federal aid were enough to *fully offset* moderate declines in state and local general subsidies over the time period studied. For independent students, the share of costs that state and local general subsidies covered was 4.4 percentage points lower in 2012 than in 1996, but the share that federal aid covered was 7.2 percentage points higher.

Dependent students from the lowest income category saw federal aid rise enough to offset much more of the decline in state and local general subsidies (measured as a share of cost that they covered). In constant 2012 dollar terms, it more than offsets the decline. Federal aid increased $2,753, while state and local general subsidies fell $1,727.

Families in the $65,001–$106,000 income group

Federal Aid and State & Local General Subsidy Share of Costs for Independent Students at Public Four-Year Colleges



saw federal support rise to offset about half of the decline in state and local general subsidies, measured as a share of college costs that they covered. In dollar terms, federal aid increased $1,851 in 2012 compared with 1996, while state and local general subsidies declined by $2,575 for this group.

For the highest income group, more generous federal aid—entirely in the form of tax benefits—offset only about one-third of the decline in state and local general subsidies measured as a share of college costs that the aid covered. In dollar terms, this group saw federal aid rise $1,447 since 1996, while state and local general subsidies fell by $2,735.

DIRECT AID FOR STUDENTS AT PUBLIC FOUR-YEAR COLLEGES INCREASED FASTER THAN COSTS

Our analysis reveals another important trend in financing for students attending public four-year colleges. Direct aid for students at these colleges increased faster than college costs over the period we examined. We define direct aid as federal and state grants made to students, federal tax benefits for tuition, and grants that colleges make to their students ("institutional grants").[13] This aid is in contrast to state and local general subsidies that colleges receive and then pass on to students indirectly in the form of lower prices. Increases in direct aid have not, however, reduced the share of college costs or lowered net tuition and living expenses for students. Rather, the growth in direct aid occurred while other aid, mainly state and local general subsidies, declined, usually by more.

The lowest income group of dependent students at public four-year colleges receives the most direct aid, and it increased from covering 19.2 percent of costs in 1996 to covering 30.8 percent in 2012. In constant 2012 dollars, this is a jump from $4,558 to $8,314. All sources of direct aid contributed to the growth, but federal grants were the biggest factor. Federal tax benefits contributed the least to the change. Low-income students benefit far less than other students from tuition tax benefits because much of their tuition costs are offset by grants and other aid, leaving them with no expenses with which to claim a credit. While they incur out-of-pocket living expenses, only tuition expenses can be used to claim federal tuition tax benefits.[14]

Our analysis reveals another important trend in financing for students attending public four-year colleges: direct aid for students at these colleges increased faster than college costs over the period we examined.

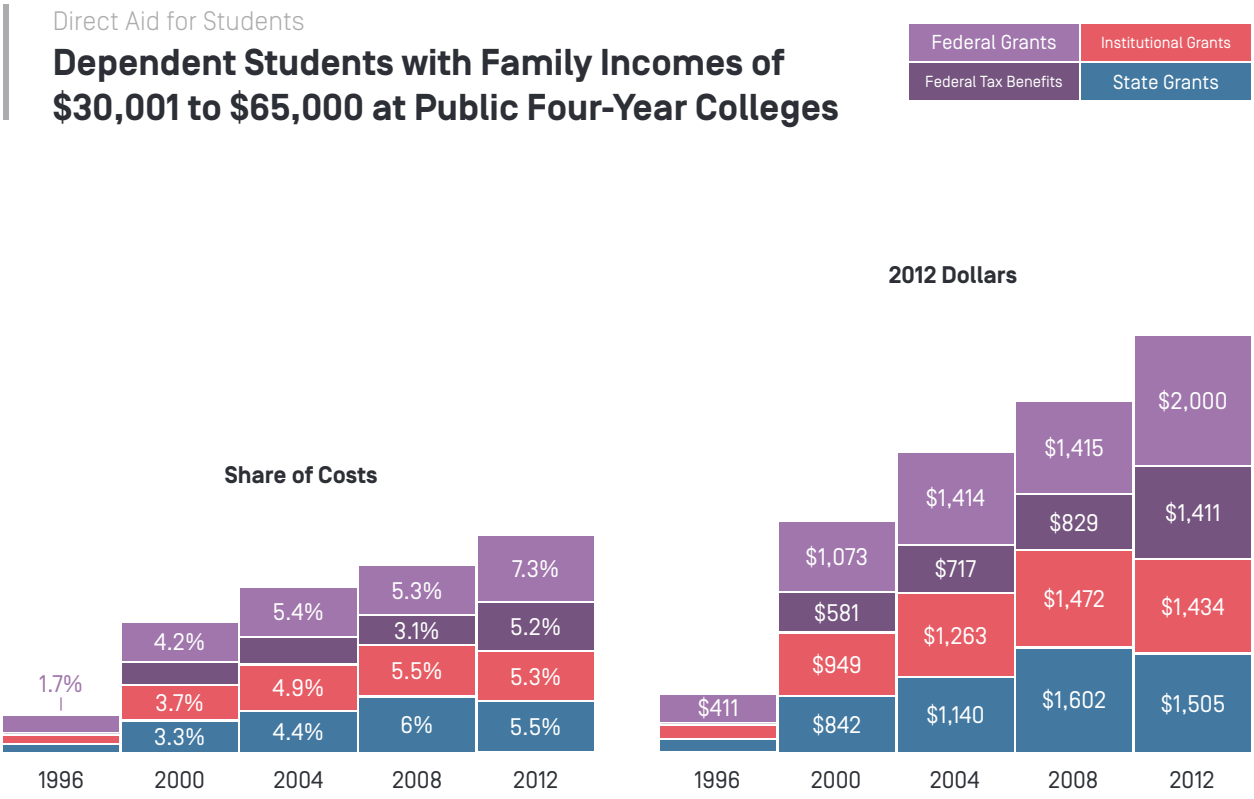
Families in the second-lowest income group ($30,001–$65,000) saw the largest increases in direct aid. It covered just 3.2 percent of college costs in 1996 for that group, but by 2012 direct aid reached 23.3 percent. Measured in inflation-adjusted dollars, these students received $757 in direct aid on average in 1996, which grew to $6,350 in 2012.

Direct aid also increased for students and families in the top two income groups, albeit by smaller amounts than for the lower two income groups. Dependent students from the highest two income groups received almost no direct aid in 1996, but by 2012 grants and tax benefits covered about 13 percent of the costs at the public four-year colleges they attended, or approximately $3,500. Most of that is in the form of federal tax benefits and institutional grants. State grant programs covered only about 2 percent of costs for the upper two income groups in 2012. Generally speaking, students in these two income groups qualify for state and institutional grants due to qualifications not related to their incomes, such as academic achievement ("merit aid"), but the terms of these programs vary widely across different states and colleges. Note that despite the rise in direct aid, these families have seen the largest increases in the share of college costs and prices that they paid (and the biggest decline in state and local general subsidies). Increases in direct aid have therefore only partially counteracted declines in other aid and partially offset large increases in the prices that they paid.

Independent students attending public four-year colleges have seen significant increases in direct aid over the time period we analyze, but that is due almost entirely to increases in federal grants and tuition tax benefits. State and institutional grants were flat as a share of costs over that time period. Notably, state and institutional grants make up a smaller share of financing for independent students than for dependent students, even dependents in the highest income group. The programs often unintentionally or even intentionally exclude independent students. For example, programs may stipulate that recipients be recent high school graduates or require that students meet high school grade-point average requirements, qualifications that independent students may be less likely to meet, particularly if they do not enroll immediately after high school.

Direct Aid for Students

Dependent Students with Family Incomes of $30,001 to $65,000 at Public Four-Year Colleges



DEBT IS FINANCING A GREATER SHARE OF COLLEGE COSTS

So far in this paper we have treated a student and family's share of college costs as one category. In this section, we look at how much of their share is made up of debt versus money they used from savings and earnings (i.e., "out-of-pocket"). Note that under our methodology, loan amounts are not the exact amounts reported in the NPSAS; rather, they reflect only the unsubsidized portion of the loan that we assign as an obligation of the student and family.[15]

We find that debt generally rose while out-of-pocket spending declined as a share of financing for students and families across all income groups and school types. Even in absolute dollar terms, out-of-pocket spending *declined* by small amounts at public two-year and four-year colleges between 1996 and 2012. At private four-year colleges, the opposite was true. Out-of-pocket spending increased in inflation-adjusted dollars. These findings are similar to those in another study that uses different data and methodology.[16]

Community Colleges

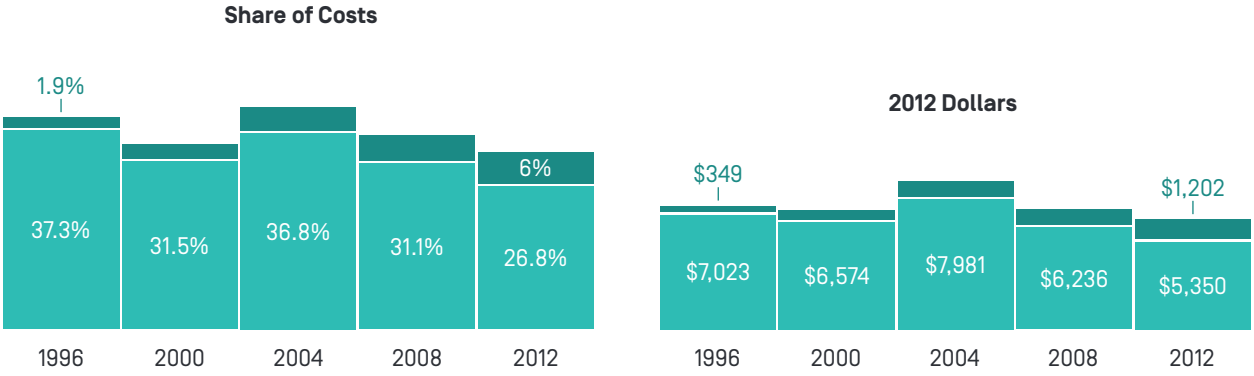
Dependent and independent students attending community college in 2012 covered a smaller share of costs with out-of-pocket dollars and increased their use of debt between 1996 and 2012. That is significant in light of our earlier finding that the share of costs and nominal amounts that these students paid did not increase over the period of analysis. That means students relied more on debt and less on out-of-pocket spending to finance their educations even when costs were flat or declining.

That may be because students who attended community college in 2012 faced unusual circumstances, and the data bear this out. The average amount that these students earned themselves while enrolled is about 30 percent lower (around $2,500 lower) in 2012 than in prior years. Also notable, the share of *independent* students living at home with their parents while enrolled in community college is twice as high in 2012 (one in three students) as any prior year in our analysis.

Independent students at community colleges increased the amount of debt they used for one year of education from 1.9 percent of college costs in 1996, or $349 in 2012 dollars, to 6.0 percent of costs, or $1,202, in 2012. Yet the total expenses they needed to finance (tuition, fees, and living costs) in absolute, inflation-adjusted dollars were lower in 2012 than in any year over the time period studied.

Debt & Out-of-Pocket Financing

Independent Students at Community Colleges



Public Four-Year Colleges

Debt steadily increased as a share of college financing among students in all income groups attending public four-year colleges over the time period we studied. It also increased in absolute dollar terms. Meanwhile, out-of-pocket spending shrank as a share of financing relative to what was typical between 1996 and 2012 for all income groups and independent students. That is also true when measuring out-of-pocket spending in absolute inflation-adjusted dollars. Dependent students in the $30,001–$65,000 income group saw the largest reduction in out-of-pocket spending, followed by independent students, two groups that saw some of the largest increases in direct aid between 1996 and 2012.

Increases in debt at public four-year colleges were correlated with income. That is true when debt is measured as a share of college costs or in absolute dollars. For families in the highest two income groups, borrowing was approximately $3,050 higher in 2012 than in 1996, adjusted for inflation. For the second-lowest and the lowest income groups, it was $2,156 and $1,639 higher, respectively. Independent students at public four-year colleges, who typically have incomes similar to those in our lowest income group, saw the smallest increase in debt.

Our discussion so far has focused on the combined debt of parents and students in the case of dependent students. We also separate those categories of debt by looking at borrowing in the federal Parent PLUS program. We find that Parent PLUS borrowing steadily increased for all income groups at public four-year colleges each year in the study, but the change between 2008 and 2012 is notably large and we focus on that time period below.

At public four-year colleges, in every income group except the lowest one, Parent PLUS loan borrowing increased *by more than student borrowing* between 2008 and 2012. That is true when measured as a percentage of college costs the debt finances and in absolute dollar terms. The increases are largest among the top two income groups, but the $65,001–$106,000 income group stands out with the largest gap. Student borrowing increased by just

$69 for that group between 2008 and 2012 for one year of education, while Parent PLUS borrowing rose by $711. Around 66 percent of full-time students borrowed the maximum in student loans in those years, which could explain why Parent PLUS borrowing increased more; over half of students had reached the limits. However, between 2008 and 2012, lawmakers increased loan limits for students in the federal program by $2,000, so it is even more notable that there is such a large difference between changes in student and parent borrowing.[17]

Borrowing among independent students at public four-year colleges shows the same trend as independent students at community colleges. The costs that they had to finance themselves were lower in 2012 than in 1996, but these students spent less out-of-pocket and borrowed more. Specifically, they used $4,162 of debt in 2012 to finance their education, $1,188 more than in 1996. Meanwhile, they used $5,854 in out-of-pocket funds, which is $2,021 less than in 1996 in inflation-adjusted dollars.

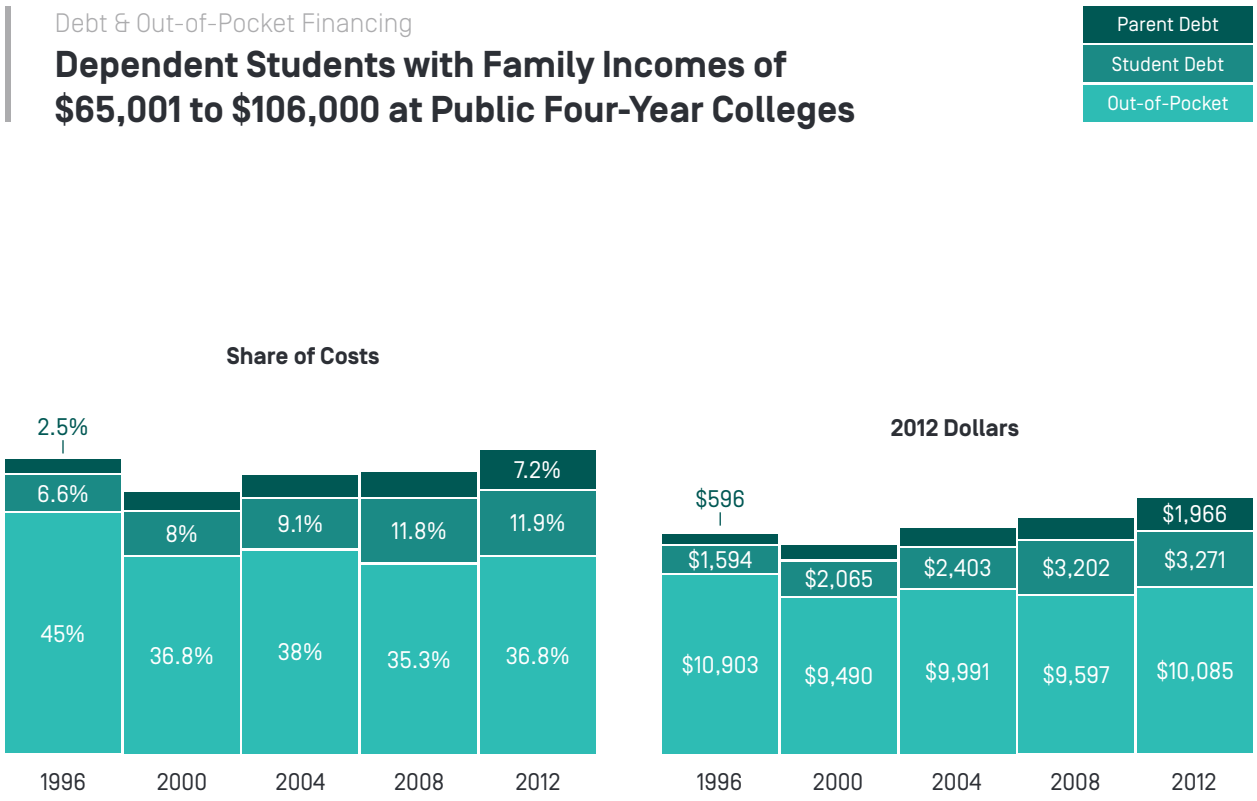
Private Four-Year Colleges

Borrowing among all income groups increased at private four-year colleges over the time period we studied, measured as share of college costs and in absolute dollar terms. The share of college costs funded through debt nearly doubled, from about 12.1 percent to 23.3 percent, between 1996 and 2012. In inflation-adjusted dollars it increased from $3,594 to $7,813. However, much of that increase occurred in the early and middle years we analyzed. There was only a small increase in debt between 2008 and 2012.

The share of costs students and families paid out-of-pocket at private four-year colleges declined across all income groups, but increased in absolute inflation-adjusted dollars. Increases were quite small for students in our lowest two income groups ($73 and $157, respectively, per year of education). For students in the highest two income groups the increase was much larger, $882 and $1,207,

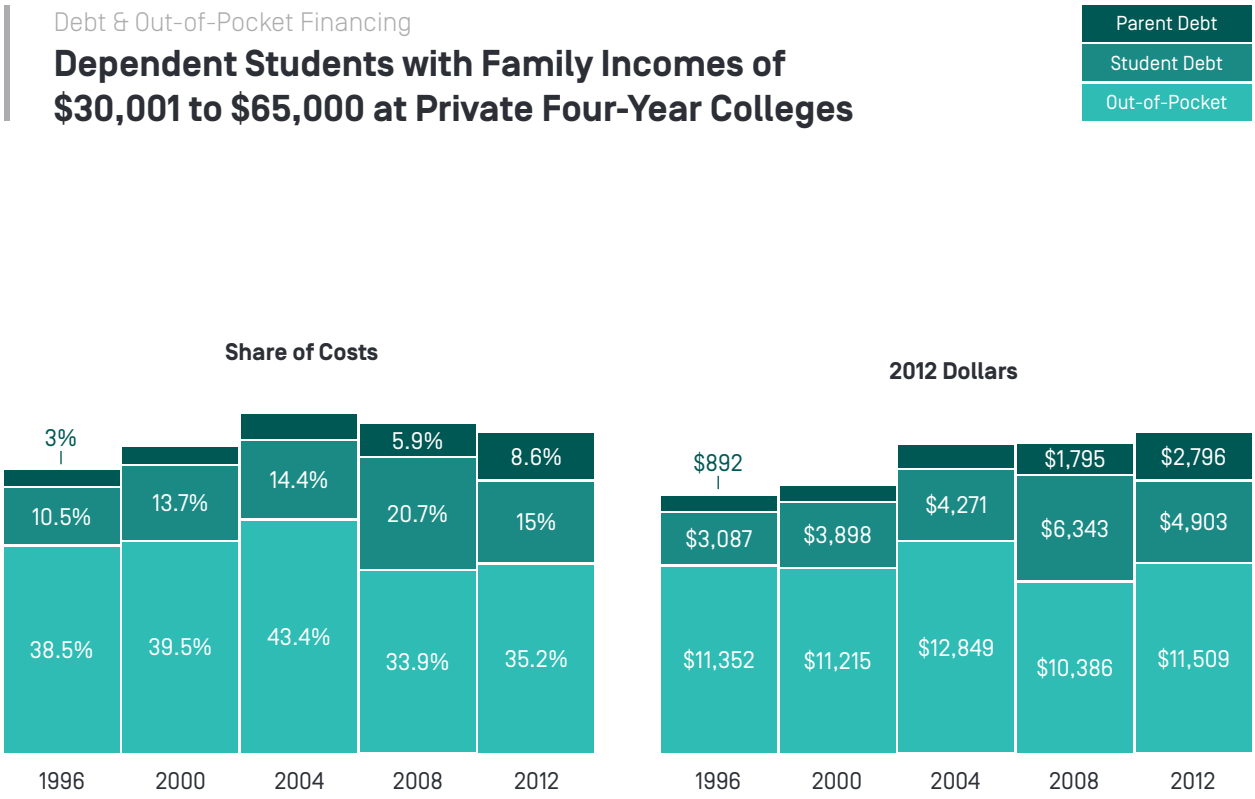
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $65,001 to $106,000 at Public Four-Year Colleges



Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $30,001 to $65,000 at Private Four-Year Colleges



respectively. Notably, independent students reduced both the share and absolute amount of college costs they paid out-of-pocket between 1996 and 2012, a trend we see for this group across all types of schools.

Much of the increase in borrowing between 2008 and 2012 is due to increases in parent borrowing. As was the case at public four-year colleges, at private four-year colleges Parent PLUS loan borrowing increased *by more than student borrowing* between 2008 and 2012. That is true measured as a percentage of college costs the debt finances and in absolute dollar terms. While about 77 percent of full-time students at private four-year colleges borrow the maximum in federal student loans, which could explain this trend, annual loan limits for students were $2,000 higher in 2012 than in 2008 due to a change in the law.

Another trend we see only at private four-year colleges is that while students increased their use of federal loans between 2008 and 2012, they simultaneously *reduced* the amount of private loans they took out by as much or more. As reported in NPSAS, the average private loan in 2008 was $3,114 among dependents at private four-year colleges, but in 2012 it fell to $1,119 (in constant 2012 dollars).[18] Students replaced much of that decline with federal loans. Congress authorized an $2,000 increase in the maximum students could borrow through the federal loan program beginning with the 2008–09 academic year, which probably accounts for much of that trend.[19]

Students and families in the $30,001–$65,000 income group at private four-year colleges actually borrowed less in 2012 than in 2008, measured as a share of college costs and in nominal dollars. That is, their debt from all sources (federal, private, etc.) fell from covering 26.5 percent to 23.5 percent of costs, or in dollar terms, from $8,137 to $7,699.[20] But within that overall decline, Parent PLUS loan borrowing still rose by $1,001. Thus, all of the net reduction in borrowing is from a decline in student borrowing.

APPENDIX A: ADDITIONAL METHODOLOGY INFORMATION

A table at the end of this section on page 31 provides an example of the approach we used to calculate college costs, the tuition and non-tuition expenses that students were charged, and all of the sources of student aid. Below is a further description of each of these components that lists the source of the data, key assumptions we made about the information, and how we allocated responsibility for each component to parents, students, institutions, states, or the federal government. Note that we used data for full-time students only and all figures in the analysis are averages.

Calculating Income Groups for Dependent Students

For this analysis we constructed four income groupings that are approximately the income quartiles for full-time dependent students in the 2012 NPSAS survey. We maintained those groupings for the NPSAS from other years, although they do not represent quartiles for those years. The groups are families earning, in 2012 dollars, $30,000 or less; those earning between $30,001, and $65,000; those earning between $65,001 and $106,000; and families earning over $106,000. The income groups reflect combined income for students and their families. For independent students, we do not use different income groups due to sample size limitations and because nearly all of these students are concentrated in the lowest two income groups. Some 68 percent of full-time independent students were in our lowest income group in 2012.

Calculating Tuition and Fees and Non-Tuition Costs

We used NPSAS data to calculate the average tuition and fees students were charged at the institutions they attended. For living expenses, such as room and board, we used the information reported in NPSAS for students' total budgets, minus tuition and fees. We combined those two averages to determine the total price students must finance at the institutions they attended.

The NPSAS does not provide detailed information about how non-tuition costs are divided among housing, food, and other costs such as books and transportation. The data are collected from administrative records and information that schools report to the government about their cost-of-living allowances. In some cases, these numbers may reflect a student's own records, but the data

generally do not reflect actual living expenses. The average non-tuition expenses reported in the 2012 NPSAS that we used for our analysis range from $9,229 for dependent students attending community college, to $14,230 for dependent student attending private four-year colleges.

Some analysts have argued that the reported figures are lower than the actual costs that students incur on average, particularly for students living at home. While some inaccuracies may indeed occur, we compared the NPSAS data on non-tuition costs for student living on campus, off campus, and at home to see if the differences appear unreasonable or suspect, but they do not. For example, non-tuition expenses for full-time dependent students at public four-year colleges living off campus but not with parents was $12,579, and for those living at home with parents it was $11,757. At community colleges it was $9,157 for those off-campus but not with parents and $9,241 for those living with parents. We do take steps to account for the effect of students living at home on overall college costs, discussed later in this section.

Calculating Total Cost of the Education

We do not rely on the tuition and fees data reported in the NPSAS to determine what it costs colleges to provide a year of education. That is because most public colleges charge prices below what it costs to provide education. Instead, we use the Delta Cost Project's most recent data on what schools spend to provide educational services; specifically, we use its measure of "education and related spending." We use this information only for imputing the value of state and local general subsidies at public colleges and calculating the total cost of education at private four-year colleges. The data from Delta Cost Project include spending on instruction, student services, and the education share of academic support, instructional support, and operations and maintenance. It excludes spending on research, hospitals, other auxiliary enterprises, and housing costs. Since the data are reported by Delta Cost in aggregate terms, we divide that figure by the reported enrollment each year. We use the median per-student expenditure in each sector (public two-year, etc.) for the years covered in our analysis.

While spending on graduate students is included in that data and may affect our estimates of spending on undergraduate education, we were unable to assess or correct for that effect. However, using the median rather than the average should help account for that effect because it is lower. Using the median also helps correct for another limitation. The Delta Cost Project data equally weight each school in creating an average. Ideally, these data would be weighted by the share of the undergraduate population each school enrolled (i.e., attendance weighted) to match the NPSAS data we use for the rest of the information in this study. Education and related spending would thus be lower than the per-school average, as larger, less-selective, and lower-cost institutions that enroll a disproportionate share of undergraduates would receive a more accurate weighting.

Calculating State and Local General Subsidies for Public Colleges

State governments provide funding to public colleges to reduce the tuition and fees that students would otherwise need to pay to cover the cost of their education. This general subsidy, which students receive indirectly through lower tuition, is not reported in the NPSAS. We impute its value for each student and school category in our analysis by taking the difference between the tuition that the school charged and the total cost of providing the education. For example, if the tuition at a public four-year school is $9,000 on average and the total cost of providing the education is $11,000, the per-student general subsidy from a state or local government is assumed to be $2,000. We assign 95 percent of the value of the state and local general subsidy to the state government's share of college financing. The remaining 5 percent we assign to the school itself under the assumption that a small share of the general subsidy may come from the school's endowment.

To gauge the accuracy of this approach we

compared the results with data from the Delta Cost Project on the amount of state appropriations individual colleges receive per student enrolled. We found that our imputations were comparable, keeping in mind that they are slightly different measurements. For example, we estimate a state and local general subsidy at four-year colleges of $7,180 for full-time dependent students and $9,869 for full-time independent students in 2012. The Delta Cost Project shows $8,109 for all full-time students, about midway between those two figures. The combined state and local appropriations for community colleges in the Delta Cost Project data are also comparable to the state and local general subsidies we estimate for students at those colleges, although our method does not distinguish between state and local sources.

Calculating General Subsidies at Private Four-Year Colleges

Private four-year colleges typically do not receive general funding from state governments. These colleges do, however, provide tuition discounting to certain groups of students that similarly drops the tuition and fees below the cost of providing the education. Typically, colleges generate such funding through their endowments or other private donations to the school. Alternatively, discounts may be part of a pricing practice where the school effectively rebates a portion of what it charges to the student. That aid is reported as institutional grant aid in the NPSAS dataset. Therefore, we do not need to impute its value and can rely on NPSAS data alone. We report it as institutional grant aid in our analysis. We assign 100 percent of the value of institutional grant aid to the institution's share of college financing.

Calculating the Amount Students and Families Must Finance Before Aid is Factored In

A key component of our accounting of college costs and sources of financial aid is the amount the student and family must finance before any aid or loans are factored in. For that figure, we again use only NPSAS data, specifically the sum of the average tuition and fees and non-tuition charges at the school students in a given category attended. This is effectively a "sticker price" that the colleges charge, which includes tuition and all living expenses. After we calculate this price, we deduct all sources of aid from it to determine an amount that the student and family must finance out-of-pocket or with debt.

Calculating Non-Tuition Costs for Students Living at Home

We also take some special steps to account for how students living at home with their parents affect costs and financing. This approach mirrors the one used in the 2004 CBO paper on which this study is based.[21] We use students' average non-tuition costs as reported in NPSAS as the starting point, but the NPSAS does not provide detailed information about how non-tuition costs are divided among housing, food, and other expenses such as books and transportation. Therefore, we assume 90 percent of those costs are divided equally between housing and food. We assume that the student and family pay the full cost of food when a student lives at home, but no housing expenses. While the family does incur housing expenses, the expenses are not additional or separate costs associated with college attendance; the family would incur them anyway as sunk costs. Average non-tuition costs for a given group of students are therefore lower than those reported in the NPSAS by the share of students who live at home.

For example, average non-tuition costs at public four-year colleges in 2012 for students from families earning $65,001 to $106,000 were $12,508, according to the NPSAS. We assume 90 percent of that is split evenly between room and board, with the remaining 10 percent for other costs like transportation and textbooks. Thus, the value of living at home for that group is $5,629 per year, the amount the family saves on additional rent and housing expenses. Because 27.6 percent of students in this group lived at home, we reduce total non-tuition costs for the group by $1,544 (27.6 percent of $5,629). That is the average value of the savings from students living at home for the entire group and it is factored into

our analysis by reducing total college cost by that amount.

We tested to see how sensitive our findings were to our assumptions, as the average of books, supplies, and transportation costs may be higher than 10 percent of the non-tuition costs; room and board costs may not comprise equal shares of the remainder of non-tuition costs; and some students living at home may have to contribute to their housing costs. Doubling the share of non-tuition costs spend on books, supplies, and transportation to 20 percent and assigning one-quarter of the remaining costs to housing costs has little effect on the dollar or percentage values used in our results. Overall non-tuition costs would be lower by $853 (rather than the $1,544 we use in our analysis for dependent student at public four-year colleges). But because the total cost of the education is $29,139, it has little overall effect on the share of costs each financing source covers. Moreover, much of our analysis focuses on changes over time. Any changes to our assumptions on the value of living at home would be applied to each year consistently, making it unlikely to change our overall findings.

Calculating Grant Financing

To determine the amount of grant aid that students receive on average for a given income group and school type, we use NPSAS data for five types of grant aid. Federal grants include all need-based grants such as Pell Grants and the Supplemental Educational Opportunity Grant program. The four other categories are: federal benefits under the Veterans Administration and the Department of Defense; state need-based and merit-based grant programs combined as one category; institutional grants provided by the school the student attends (need-based and merit-based aid combined); and aid provided by employers, either the students' or parents'. We assign 100 percent of the value of the grant to the entity issuing the aid.

We did not assign federal work study awards—a relatively small source of federal student aid—to the federal government; we assigned those to the student's contribution to college financing. For all full-time students at the school types we analyzed, work study accounts for about $300 per student on average, only a portion of which is funded with federal dollars. We assign all of a federal Supplemental Education Opportunity Grant to the federal government, although a third of it is funded by the college. However, NPSAS includes the full amount of these grants in the institutional grant aid variable, which we use in our analysis. Thus, a portion of this grant aid is double counted. These grants are a small share of financing: only about 6 percent of students receive an average grant of $541.

Calculating Loan Financing

To determine the amount of loans that students receive on average for a given income group and school type, we use NPSAS data for six types of loans. These include federal Subsidized Stafford loans and Perkins Loans; federal Unsubsidized Stafford loans; federal Parent PLUS loans; private student loans issued by for-profit and nonprofit businesses; institutional loans made by the school the student attends; and loans issued by state government programs. We are unable to include other forms of debt that students and families may use to finance college, such as home equity loans, because consistent and reliable information is not included in the NPSAS. The way in which we assign the value of the student loan to the various financing sources requires some explanation.

Because a student or Parent PLUS loan is money the student or family must ultimately pay (for the most part), we assign a student loan to the student and family source of financing. However, if the loan carries terms that are better than what the recipient could secure in the private market, such as lower interest rates or loan forgiveness benefits, the borrower receives a subsidy from the lender. That is generally the case for loans issued by federal or state governments or colleges. Therefore, we assign some of the value of the loan to the lender or whoever is subsidizing the loan.

For example, for a Subsidized Stafford loan from the

federal government issued in the 2011–12 academic year, we assign 69 percent of the value of the loan to the student, 30 percent to the federal government, and 1 percent to state government. The federal portion reflects the beneficial terms of the loan (it is interest-free while the student is in school and the rate thereafter is below-market; he can deduct the interest when figuring his federal income taxes; and he can repay the loan through income-based repayment programs and qualify for loan forgiveness). The state portion reflects the value of the interest deduction on his state income taxes as his adjusted gross income is lower due to the federal deduction.

To measure the subsidies in federal student loans, we use information from the Congressional Budget Office on fair-value estimates. The budget agency describes those as the most comprehensive estimates. We extrapolate those estimates for years prior to 2008 in our study because CBO only began providing fair-value estimates in 2007.[22] We also add the value of the student loan interest deduction to those subsidy rates, as it is effectively the government providing a lower interest rate on the loan. We estimate the interest deduction provides a federal subsidy to the borrower worth 5 percent of the amount borrowed and state subsidy worth only 1 percent, since states have lower income tax rates. Note that CBO includes the cost to taxpayers of loan repayment plans, such as Income-Based Repayment and Public Service Loan Forgiveness, in its subsidy rate estimates.

We assign the same subsidy rates to federal loans in the years in our study between 1996 and 2008. Between 1996 and 2006, the terms and benefits available to borrowers were constant. Borrowers could obtain loans with variable interest rates and had the option to convert the loan to a fixed interest rate at any point. Beginning in 2006 the terms on newly issued loans changed. All loans carried fixed interest rates, but even after those changes, the loans provided relatively equal benefits to what was in place before, until market interest rates declined in late 2008. Therefore, for 2012 we assign lower subsidies to federal Unsubsidized Stafford loans and Parent PLUS loans per CBO's fair-value estimates because market interest rates were low, but interest rates on student loans remained at historically high rates set in 2006.[23] We do not assign a lower subsidy rate that year for Subsidized Stafford loans because lawmakers cut the interest rate to 3.4 percent on these loans between 2007 and 2012. (CBO fair-value estimates did not factor this in because the 3.4 percent interest rate was set to expire in the 2012–13 academic year when it published estimates.) That interest rate cut effectively preserved the benefits on the loans relative to what was available in the private market between 2008 and 2012, as market interest rates fell during that time.

As mentioned in the body of this paper, the subsidy rate on federal Parent PLUS loans in 2012 was negative, meaning the federal government earned money on the loan, rather than provided a subsidy to parents. We assign the same subsidy rates to state and institutional loans as federal Unsubsidized Stafford loans, but allocate the subsidy to the state or institution share of college financing. For private student loans we assign only the federal and state interest deduction as a subsidy.

The federal subsidy amounts for 1996 through 2008 are as follows: 30 percent for Subsidized Stafford loans; 17 percent for Unsubsidized Stafford loans; and zero for Parent PLUS. The federal subsidy amounts for 2012 are as follows: 30 percent for Subsidized Stafford loans; 5 percent for Unsubsidized Stafford loans; and a negative 19 percent for Parent PLUS subsidy. All subsidy rates include the value of the student loan interest deduction.

Calculating Tuition Tax Benefits

The NPSAS does not include information on tuition tax benefits that students claimed or were eligible for in each of the years of our study. We therefore estimated the average tuition tax benefit a student and family was eligible to claim in each of the years studied using other data from the NPSAS. (This is the same approach we used for a paper published on tuition tax benefits in 2015 and more details are

included in that paper.[24]) The tuition tax benefits include the Hope tax credit, the Lifetime Learning Credit, the American Opportunity Tax Credit, and the deduction for tuition and fees. These benefits have changed substantially over time and did not exist prior to 1997, so all values for tuition tax benefits in our 1996 analysis are zero.

One limitation of our approach to bear in mind is that estimating tax benefits using survey data cannot show what share of eligible students claim benefits, and our estimates do not represent actual behavior or take-up rates. We do, however, take steps to ameliorate that limitation, mainly by excluding students and families who did not file federal tax returns but otherwise would be eligible for a benefit. Our results for 2012 are roughly in line with recent IRS statistics on take-up rates and average benefits.[25] Additionally, our method shows that about 40 percent of undergraduates are eligible for tax benefits.

Our approach reflects eligibility for a tax filer's optimal tax benefit. Tax filers can only claim one benefit per year, per student, although they are often eligible for more than one. In reality, students and families do not always maximize their benefits. We calculate and report tax benefits for dependent undergraduates according to the parents' and student's combined income and the parents' marital status. For independent students we use the student's household income and marital status. We assign 100 percent of the value of the tax benefit to the federal government's share of college financing and we reduce the amount that the student and family paid by the same amount.

We do not include tuition tax benefits offered by states in our study as the necessary data are not available. Nor do we include any follow-on benefit a family or student may gain on her state income taxes when she claims the federal tuition tax benefits.

Calculating Tax-Advantaged Savings (529s)

We include benefits that families earn through tax-advantaged savings plans that are exempt from federal and state income taxes, such as 529 plans. Many states also provide tax benefits in addition to tax-free earnings and distributions for contributions families make to 529 plans, such as deductions and credits on state income taxes for amounts they contribute.

The NPSAS dataset includes limited information about families' use of these plans in some years and none at all in other years. We therefore had to estimate values and make a number of assumptions to include these benefits in our analysis. We relied on statistics reported by the Government Accountability Office in 2012 and information from the College Savings Plan Network for our estimate.[26]

We include tax-advantaged savings in our analysis for families of dependent students in only the two highest income groups and only those with students attending four-year colleges, both public and private. We also build in an assumption that families in the highest income groups use the plans more than the second-highest group and assign them larger benefits. The plans gained popularity slowly after policymakers changed the law in 2001 to allow families to take tax-free withdrawals from the plans. Prior to that change, families paid deferred federal income taxes on the plans. That meant the plans were far less popular in the early 2000s than they were by 2012. Therefore, we include the benefits in our analysis starting in 2004. We also increase the amount by which families use the plans in each successive year of our study to reflect asset growth and distribution growth shown in the sources we reviewed. In 2001, the earliest date for which data are available, total balances in 529s were $13.6 billion in 2.4 million accounts. By 2012 that figure had grown to $179 billion in 11.0 million accounts.

We assume that on average only a small portion of college financing contributions come from tax-advantaged savings, even though for some individual families the amount may be quite large. About one million taxpayers took 529 distributions in 2010 and total undergraduate enrollment at four-

year colleges was about 10 million students. The average distribution was $18,000.[27]

Because we assume that most of the funds withdrawn from a 529 are original contributions (i.e., principal), not earnings on contributions, we assign most of the value of a 529 distribution to the family and a small portion to federal and state governments. Specifically, we assign 15 percent of the value of those contributions to the federal share of college financing and 5 percent to the state share to reflect the value of the tax breaks families receive on the earnings they accumulate in the accounts. Those assumptions and calculations translate into small benefits, even for the highest-income families.

The largest benefit we assign is for families in our highest income group in 2012. We assumed their combined state and federal tax benefits from savings plans were worth an average of $351 at public four-year colleges and $864 at private four-year colleges for one year of school. They are higher at private four-year colleges because families spend more out-of-pocket for those colleges. At most those amounts cover 2 percent of college costs.

Calculating Student and Family Share of Financing

We impute the amounts that students and families contribute in the form of saving and earnings toward the cost of the education. We do not use a specific data point in NPSAS for this information; rather, we derive it from the other data on cost and student aid. After we establish the average amount that a category of students must finance, we factor in all student aid that they received, including student loans, and the amount remaining is the imputed value of what the student or family used from savings or earnings that year. We can use data in NPSAS to determine how much of that amount came from the student's earnings during the year, and assign the remainder to the parent (for dependent students). In some instances, the sum total of a student's financial aid, loans, and earnings from work total slightly more than the amount he needed to finance. We attribute that to the general imprecision of our methodology or the imprecision of information that survey respondents report themselves and is not verified by administrative records.

How We Identified and Allocated College Costs and Financing

2011—12 School Year

Public Four-Year Colleges
Dependent Students
Household Incomes $65,001—$106,000

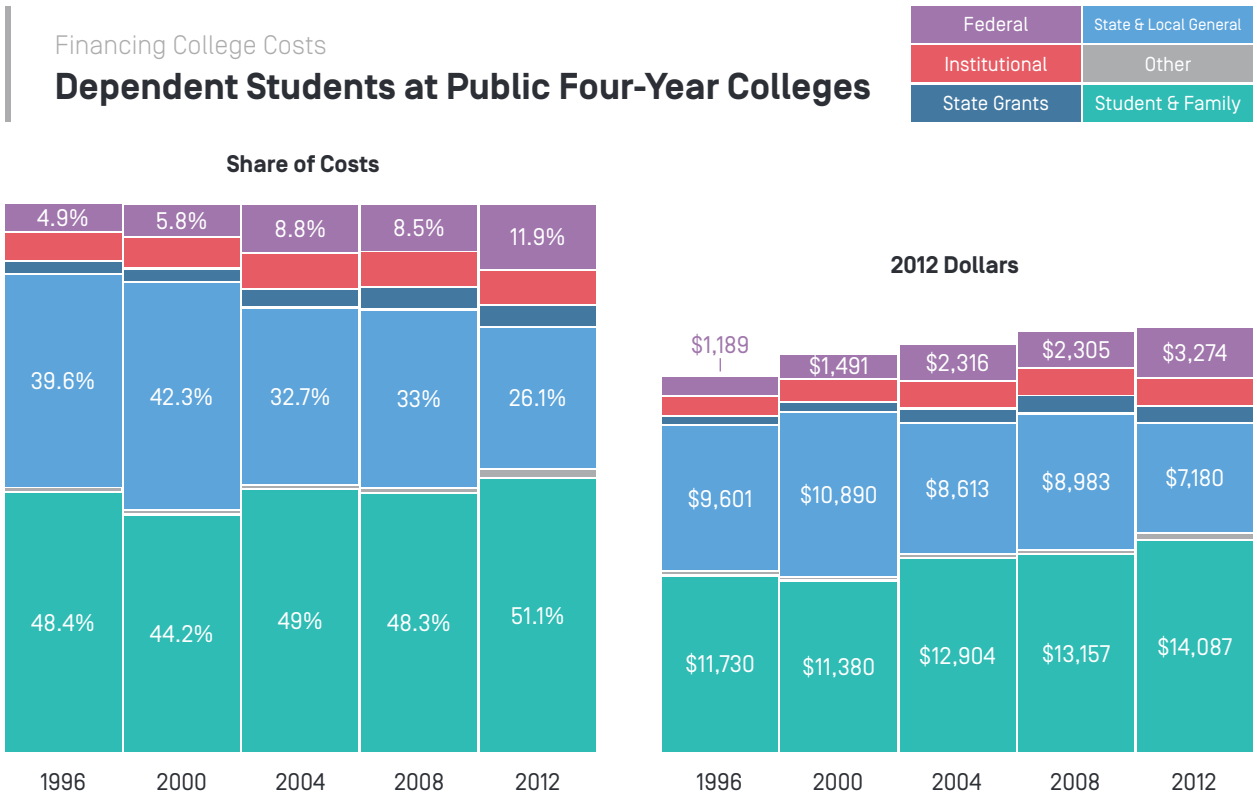
		Financing Share					
		Student	**Family**	**Federal**	**State**	**Institution**	**Other**
Total College Cost	$28,954						
State General Subsidy	$7,649				95%	5%	
Education Costs	$16,446						
Tuition and Fees	$8,797						
Non-tuition Costs	$12,508						
Amount Student Must Finance	$21,305						
Grants							
Federal	$117			100%			
State	$576				100%		
Institutional	$1,142					100%	
Veterans & Defense Dept.	$113			100%			
Employer	$261						100%
Loans							
Federal Subsidized Stafford & Perkins	$1,655	69%		30%	1%		
Federal Unsubsidized Stafford	$1,535	94%		5%	1%		
Private	$686	94%		5%	1%		
Institutional	$4	94%		5%	1%	0%	
State	$40	94%		5%	1%		
Student Earnings							
While Enrolled	$3,165	100%					
Saved from Summer Work	$1,130	100%					
Parent Contributions							
Cash and Savings (non-tax-advantaged)	$4,065		100%				
Savings (tax-advantaged)	$214		80%	15%	5%		
Tax Credits/Deductions	$1,827		0%	100%			
PLUS Loans	$1,666		118%	-19%	1%		
Room at Home (27.6% of Students)	$1,554		0%				
Board at Home	$1,554		100%				

APPENDIX B: SOURCES OF COLLEGE FINANCING

1. Public Four-Year Colleges

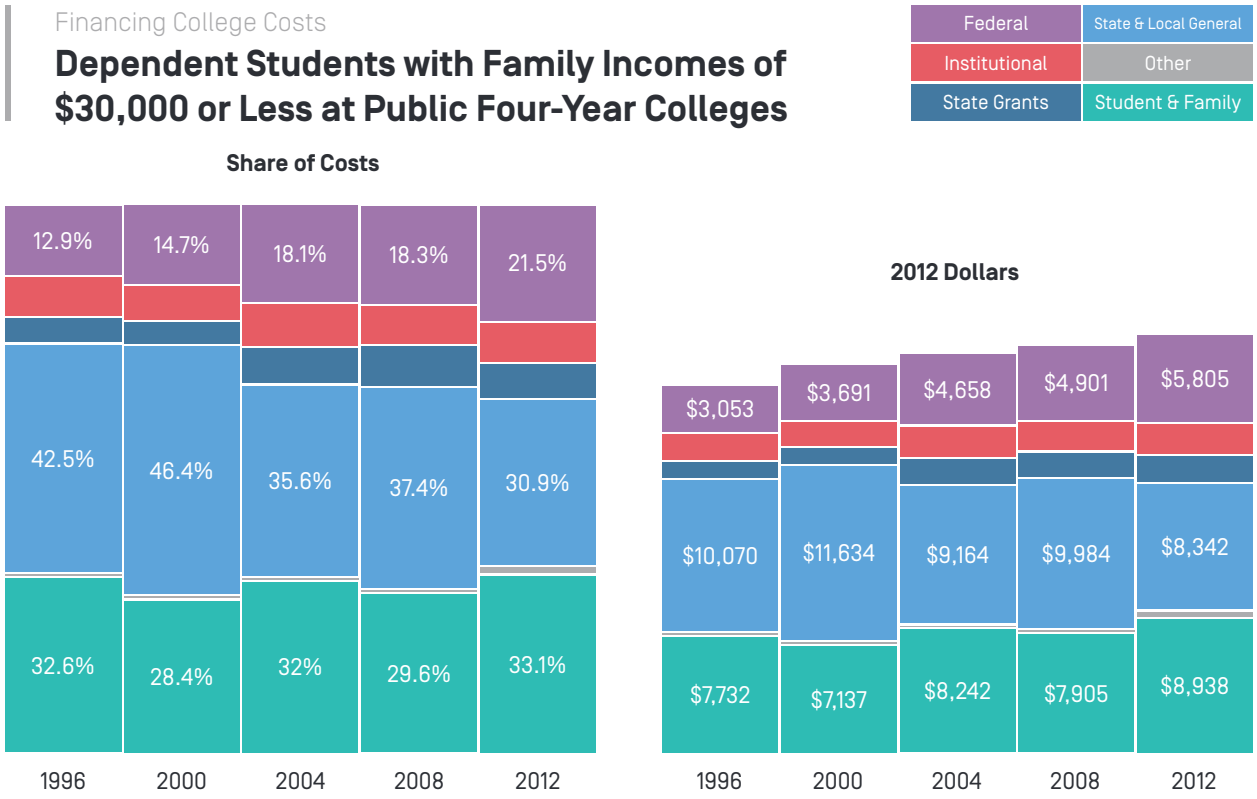
Financing College Costs

Dependent Students at Public Four-Year Colleges



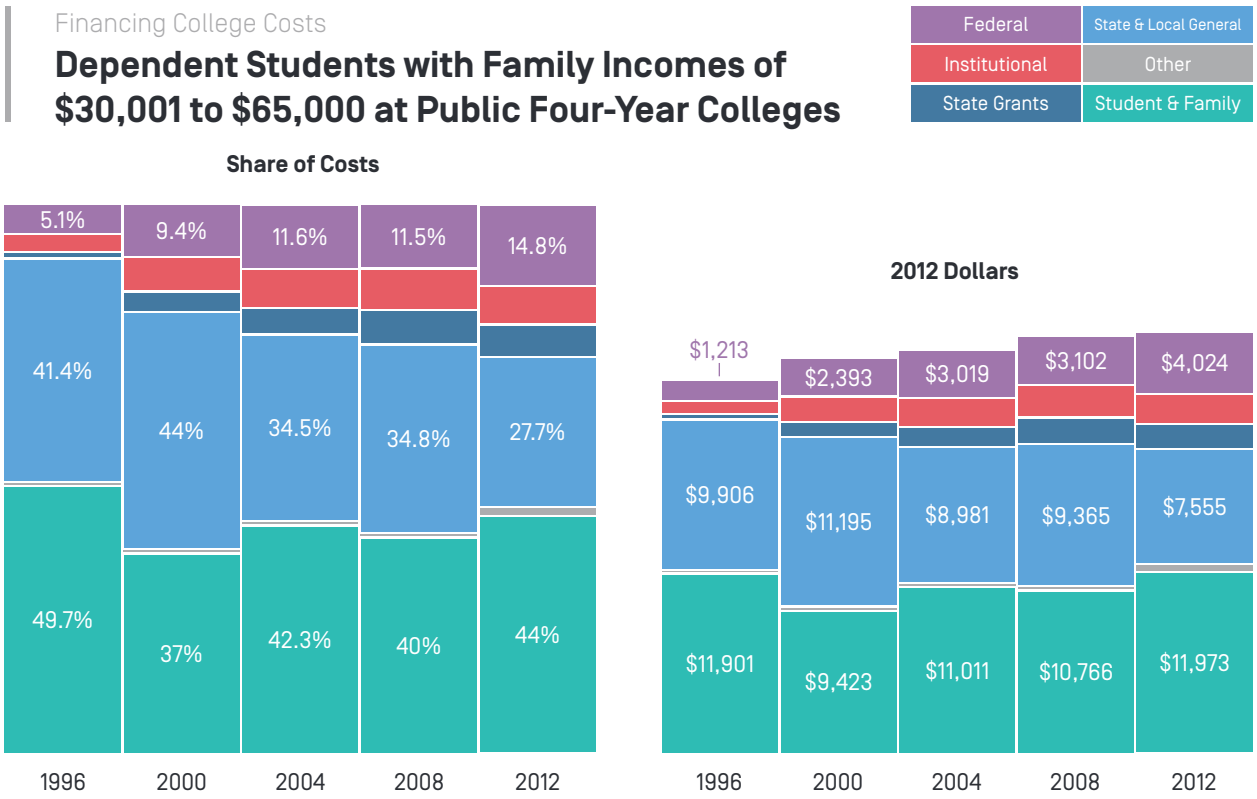
Financing College Costs

Dependent Students with Family Incomes of $30,000 or Less at Public Four-Year Colleges



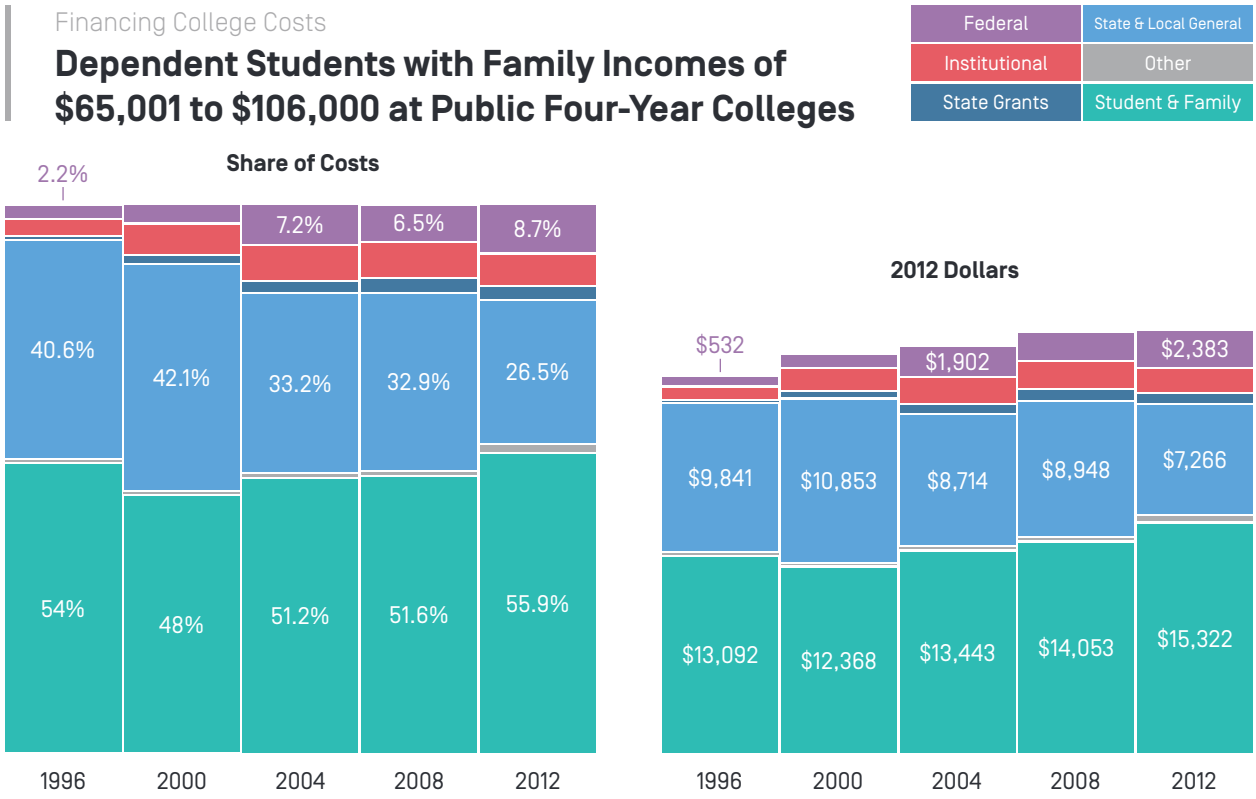
Financing College Costs

Dependent Students with Family Incomes of $30,001 to $65,000 at Public Four-Year Colleges



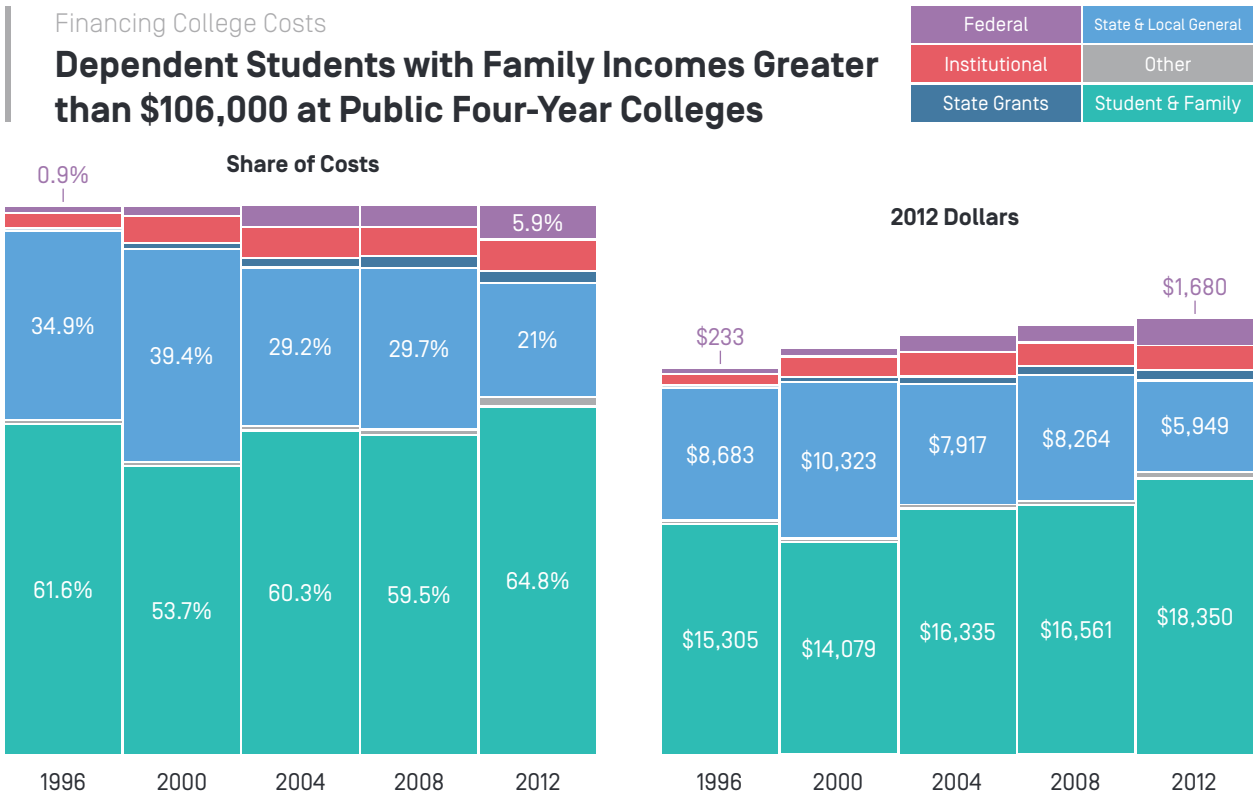
Financing College Costs

Dependent Students with Family Incomes of $65,001 to $106,000 at Public Four-Year Colleges



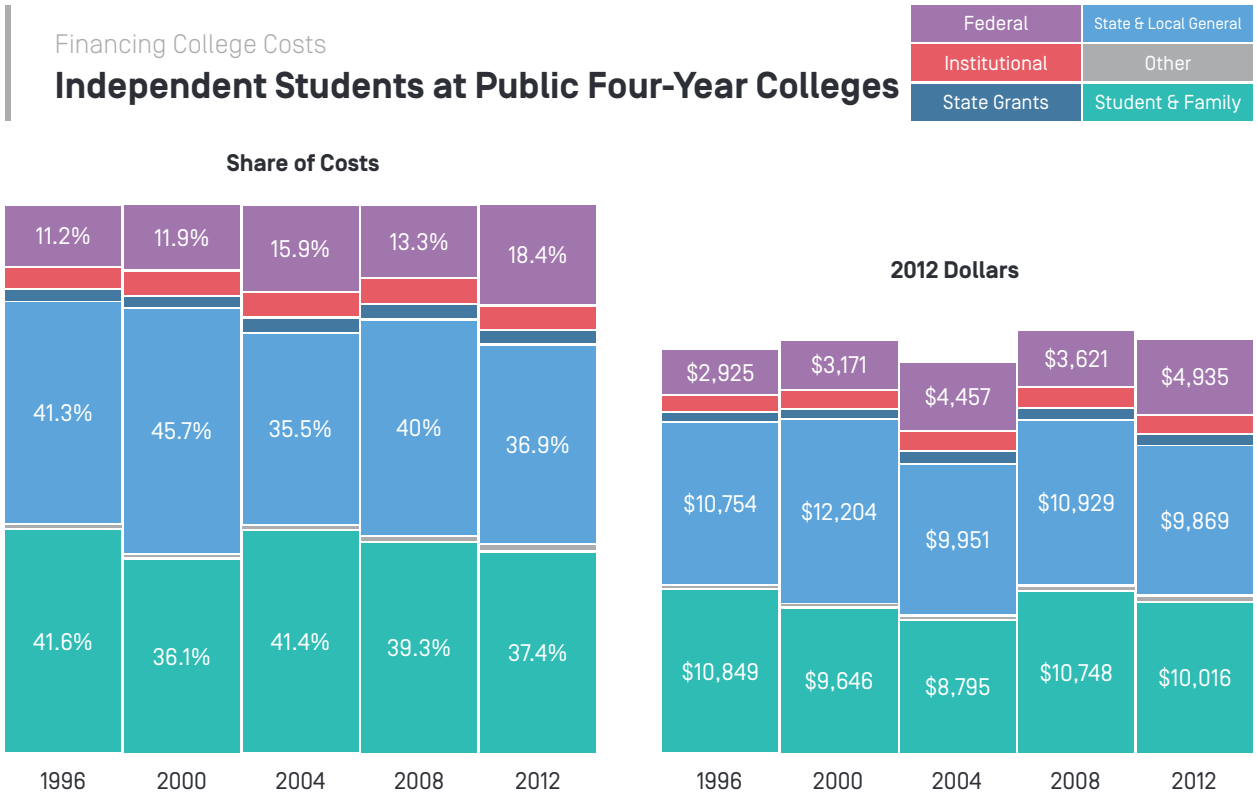
Financing College Costs

Dependent Students with Family Incomes Greater than $106,000 at Public Four-Year Colleges



Financing College Costs

Independent Students at Public Four-Year Colleges

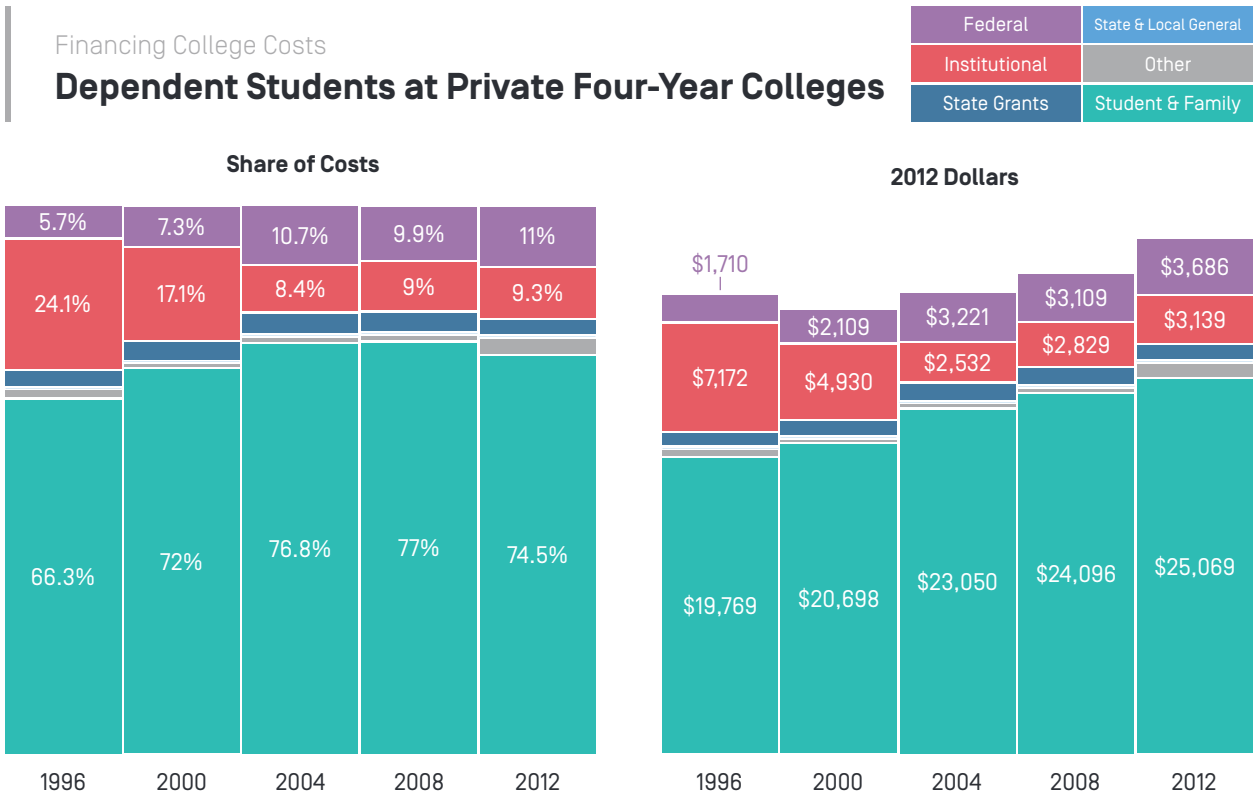


APPENDIX B: SOURCES OF COLLEGE FINANCING

2. Private Four-Year Colleges

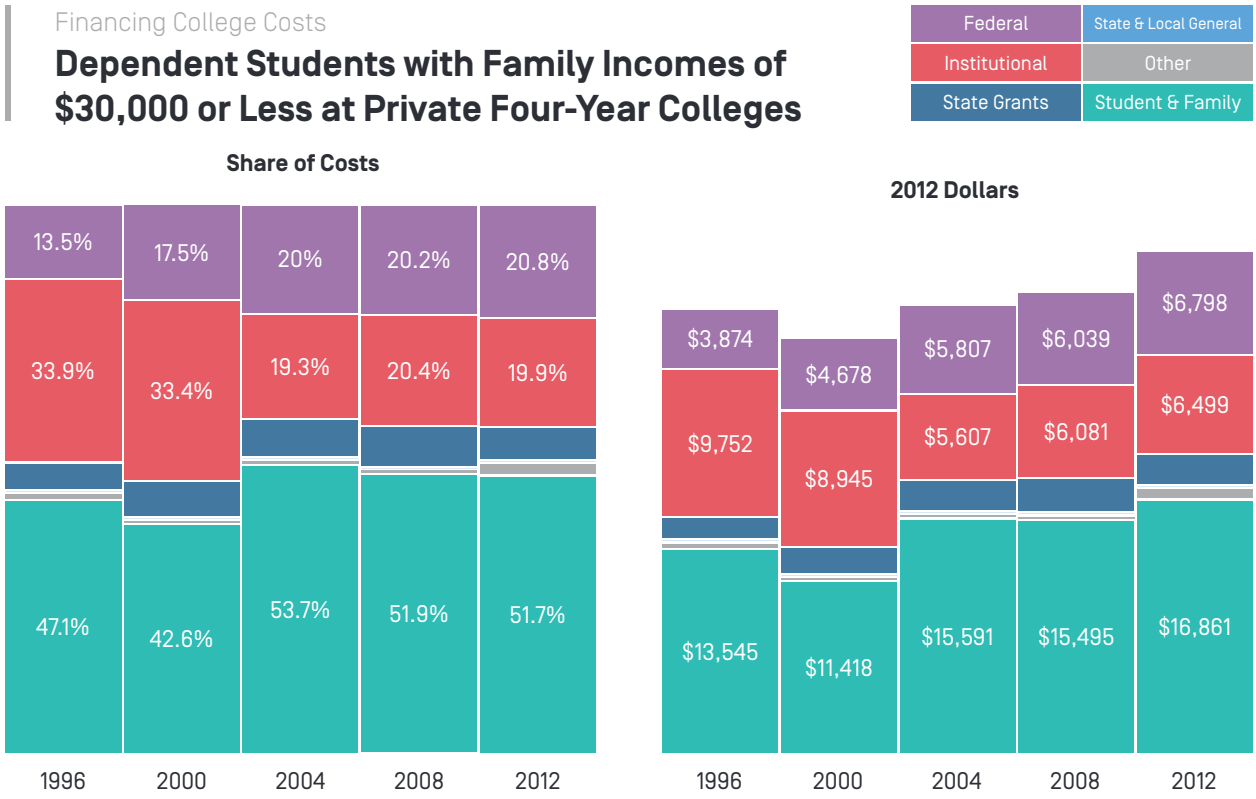
Financing College Costs

Dependent Students at Private Four-Year Colleges



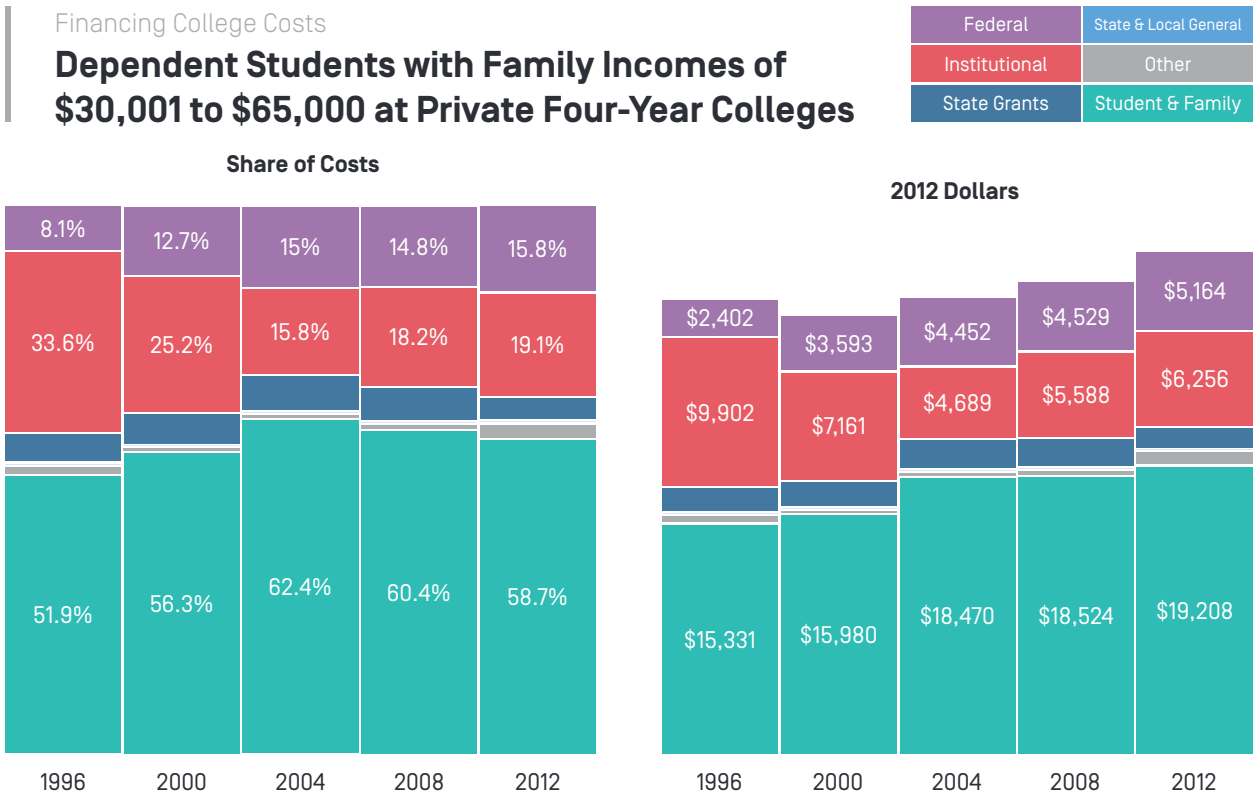
Financing College Costs

Dependent Students with Family Incomes of $30,000 or Less at Private Four-Year Colleges



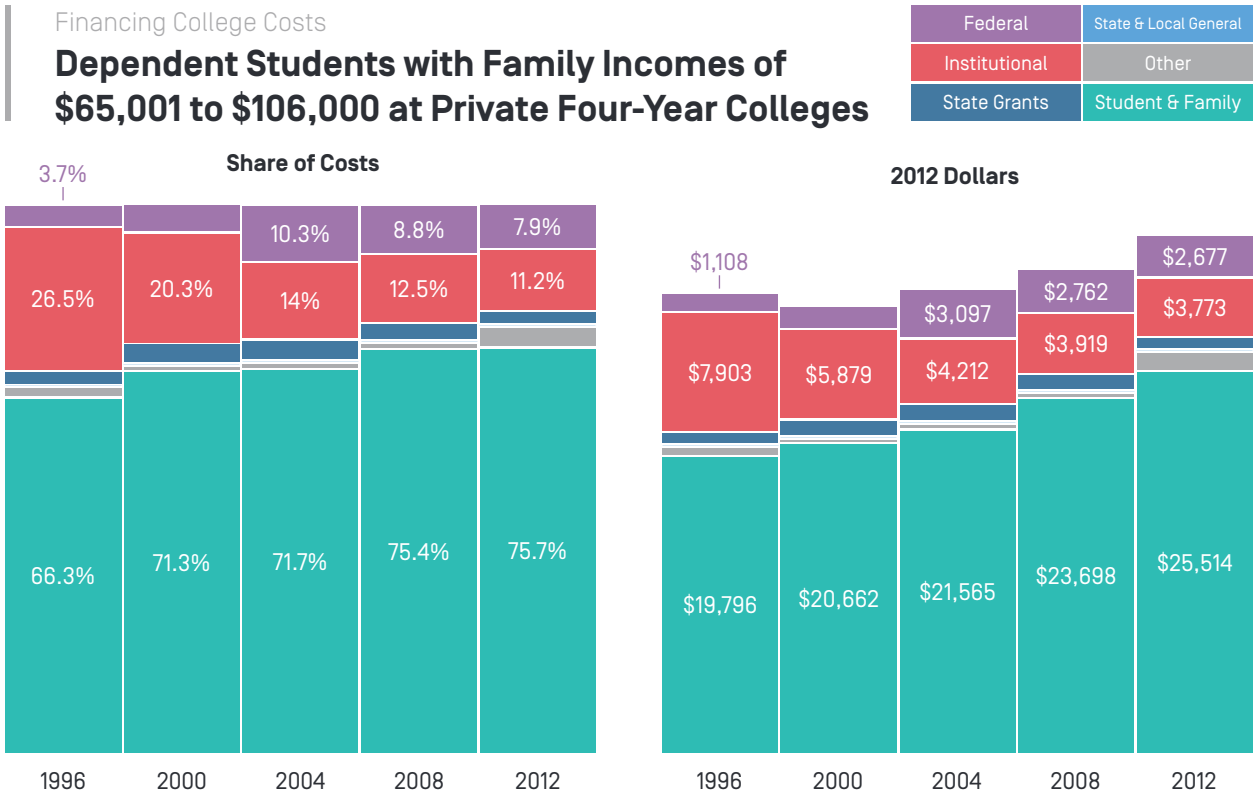
Financing College Costs

Dependent Students with Family Incomes of $30,001 to $65,000 at Private Four-Year Colleges



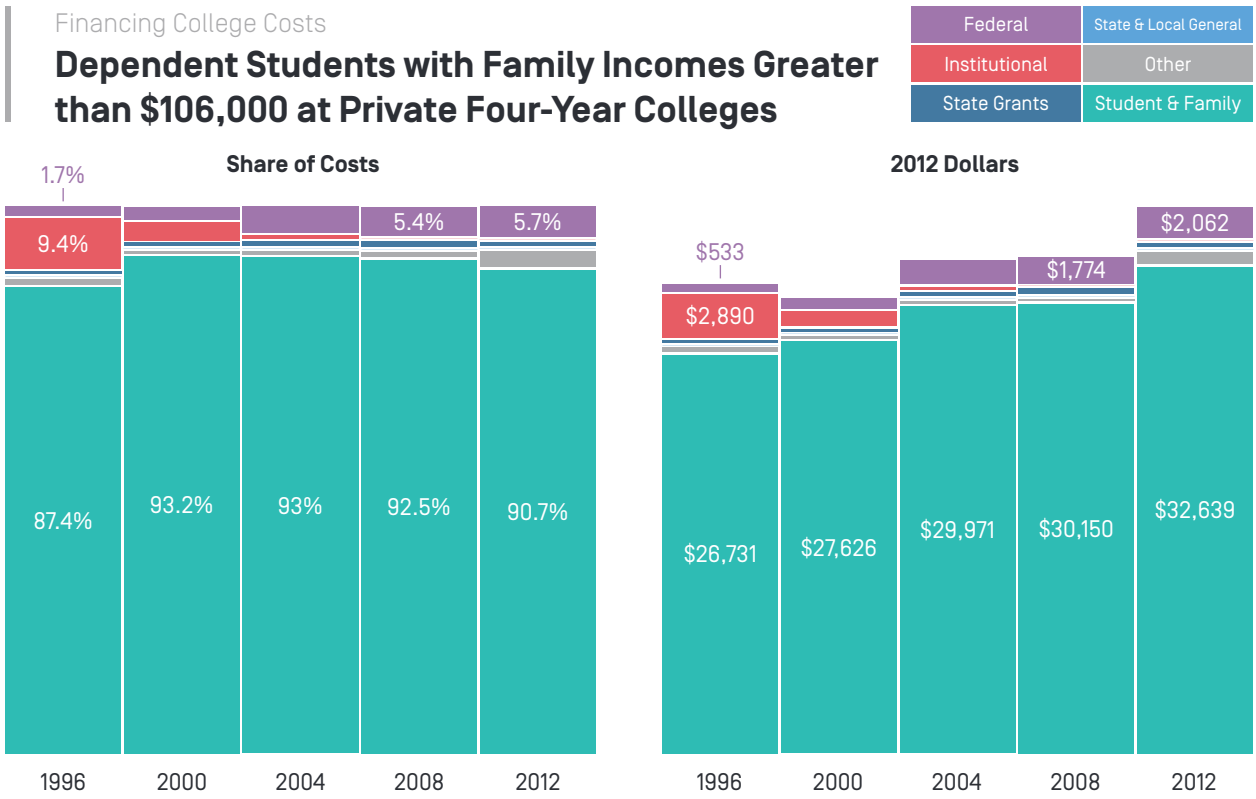
Financing College Costs

Dependent Students with Family Incomes of $65,001 to $106,000 at Private Four-Year Colleges



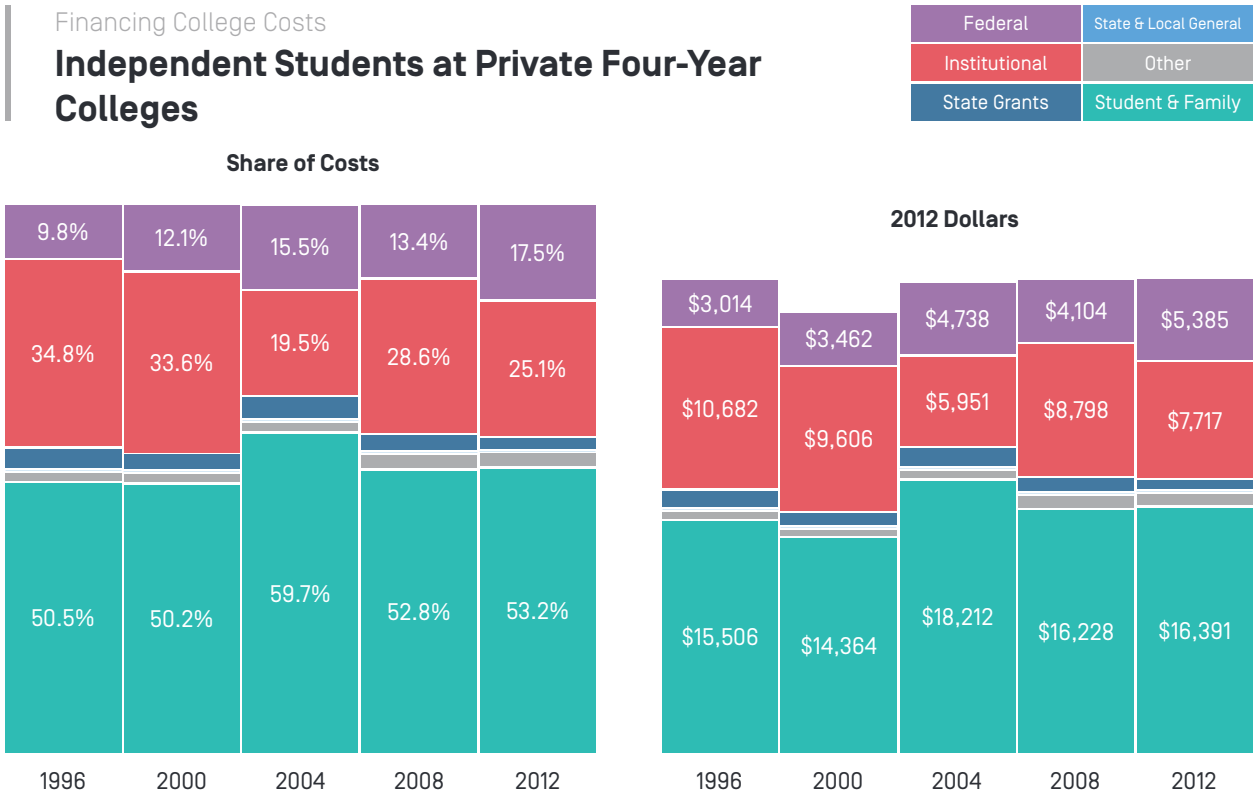
Financing College Costs

Dependent Students with Family Incomes Greater than $106,000 at Private Four-Year Colleges



Financing College Costs

Independent Students at Private Four-Year Colleges

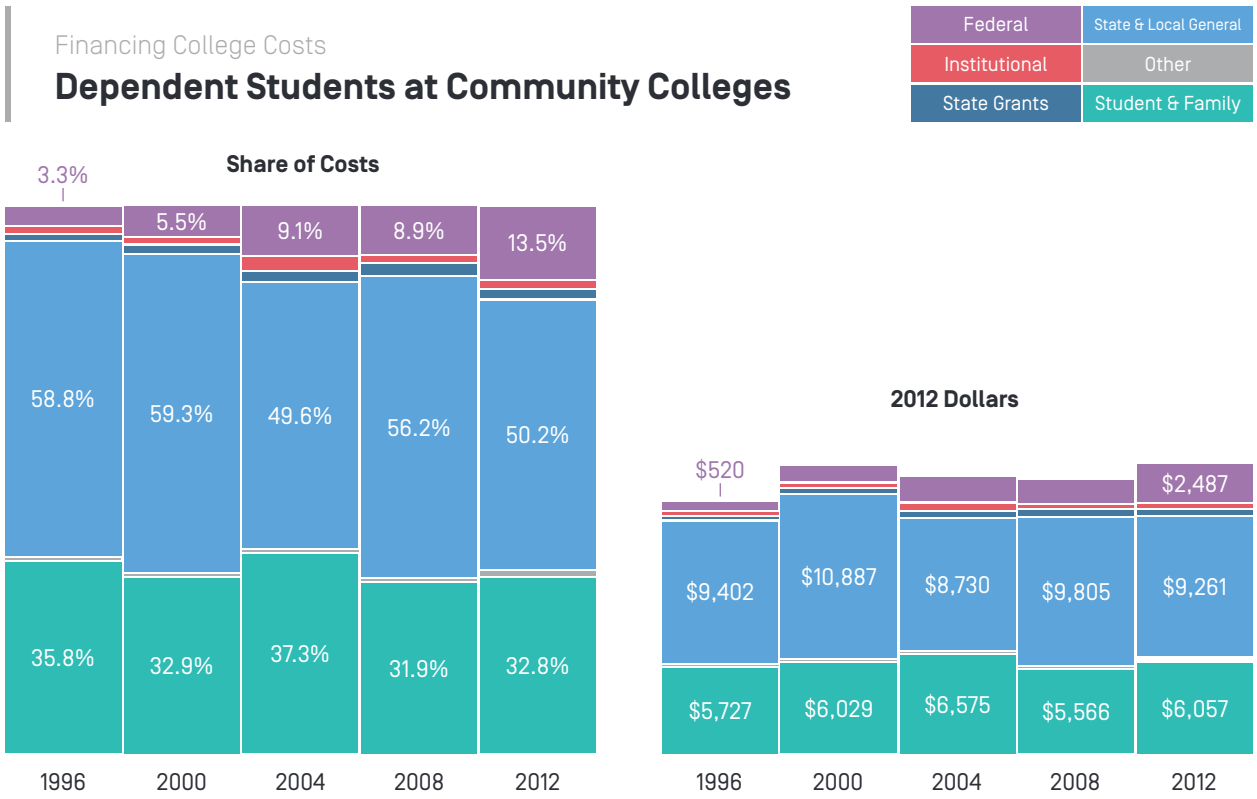


APPENDIX B: SOURCES OF COLLEGE FINANCING

3. Community Colleges

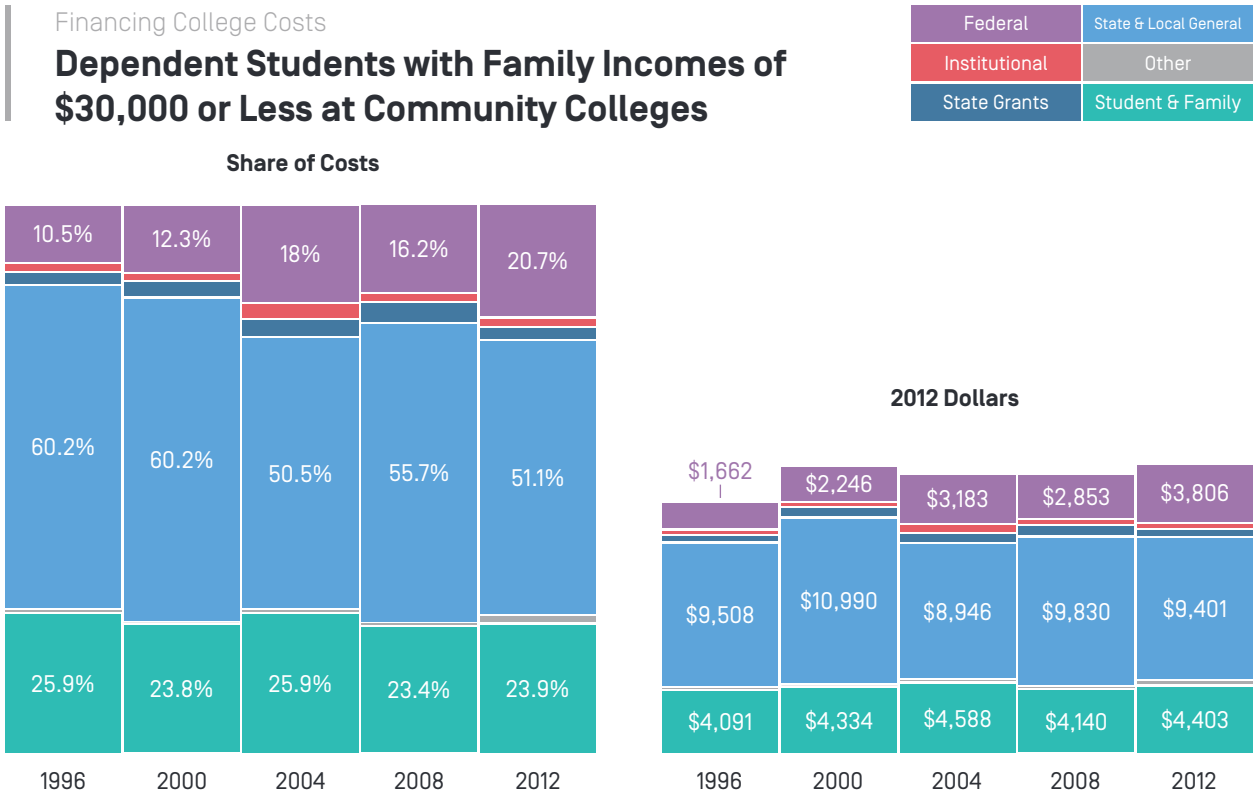
Financing College Costs

Dependent Students at Community Colleges



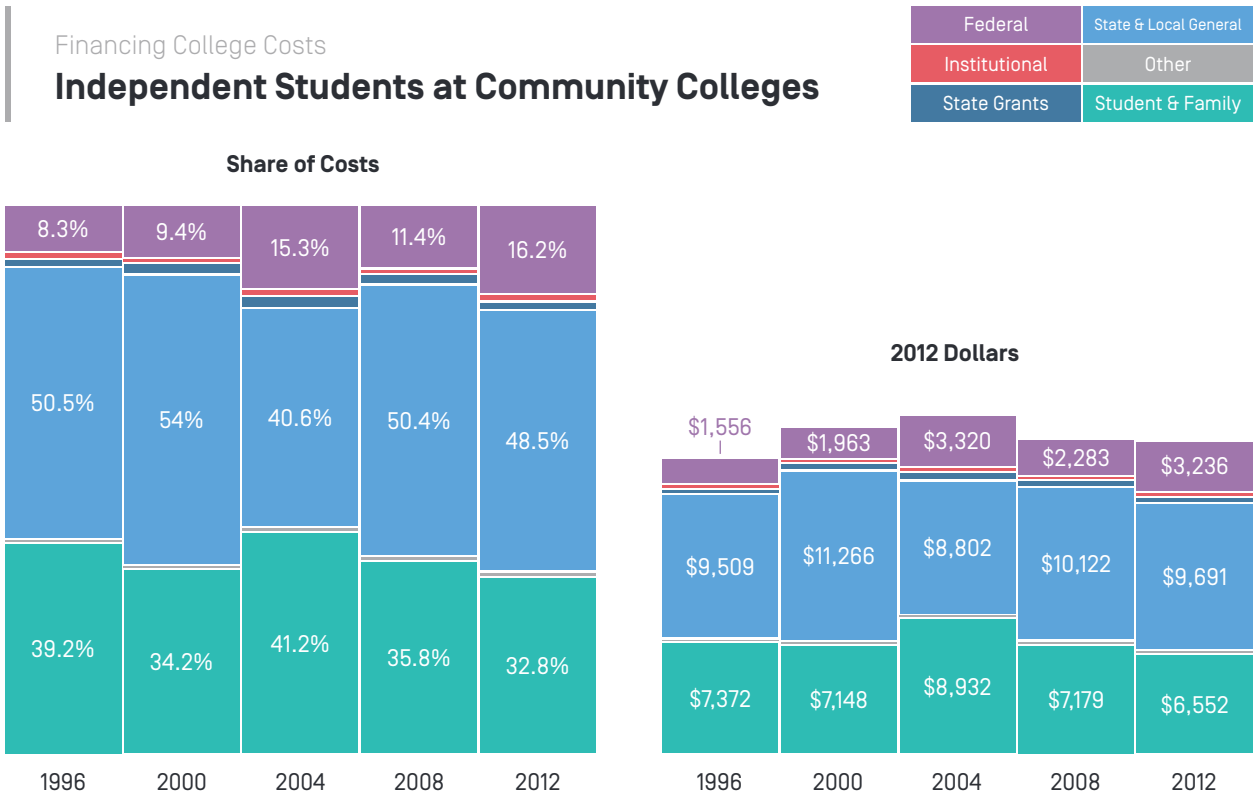
Financing College Costs

Dependent Students with Family Incomes of $30,000 or Less at Community Colleges



Financing College Costs

Independent Students at Community Colleges

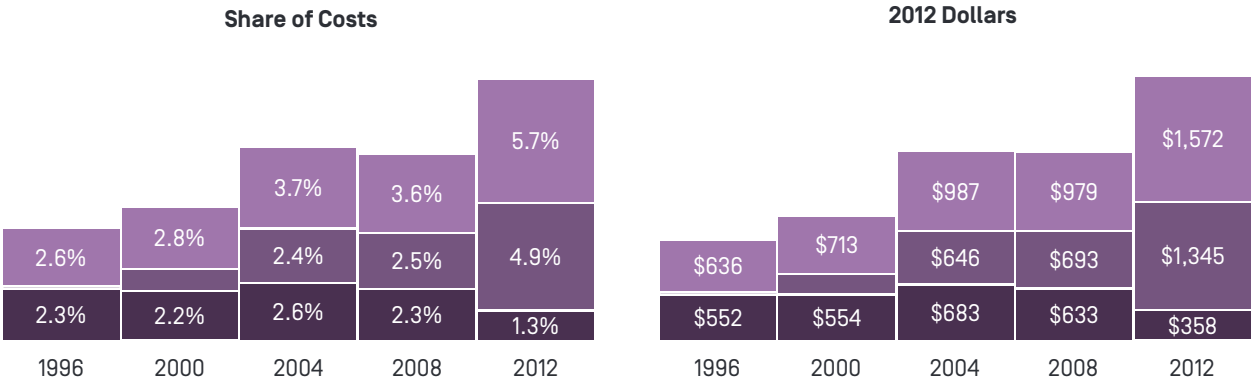


APPENDIX C: FEDERAL FINANCING OF COLLEGE COSTS

1. Public Four-Year Colleges

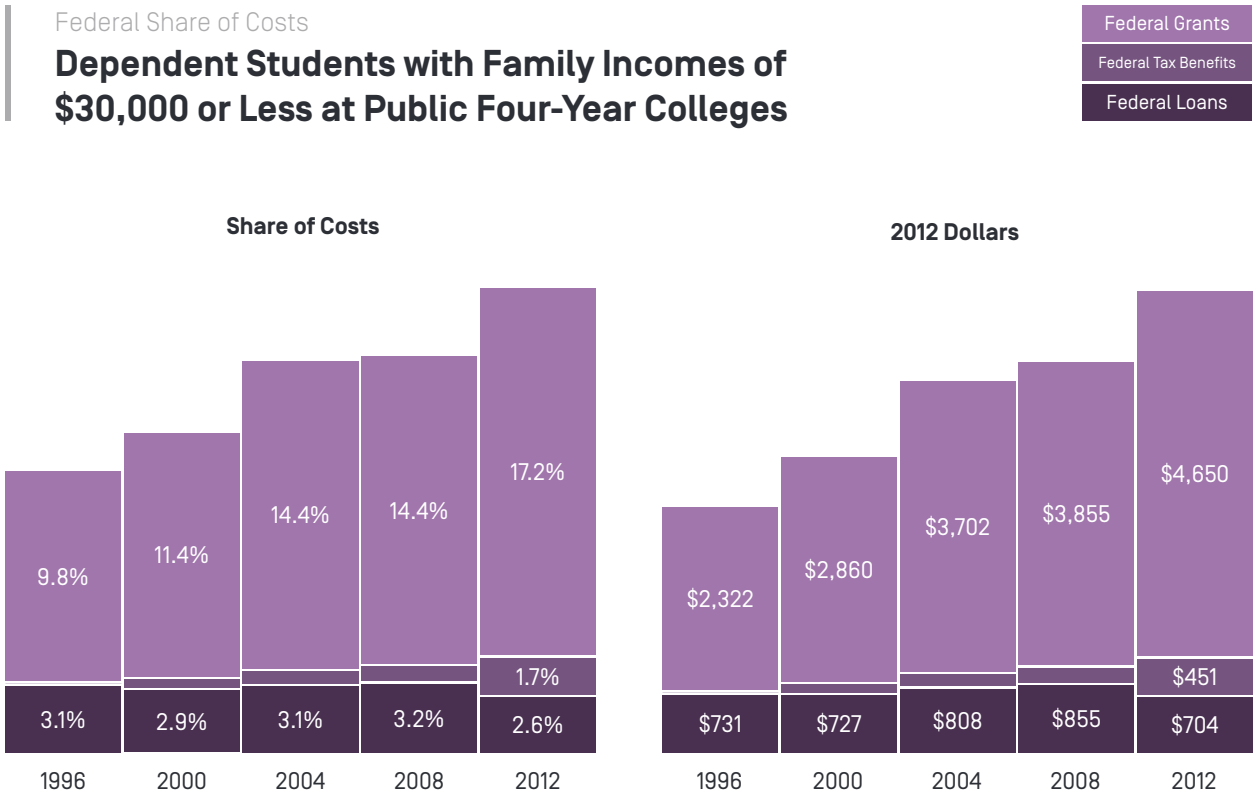
Federal Share of Costs

Dependent Students at Public Four-Year Colleges



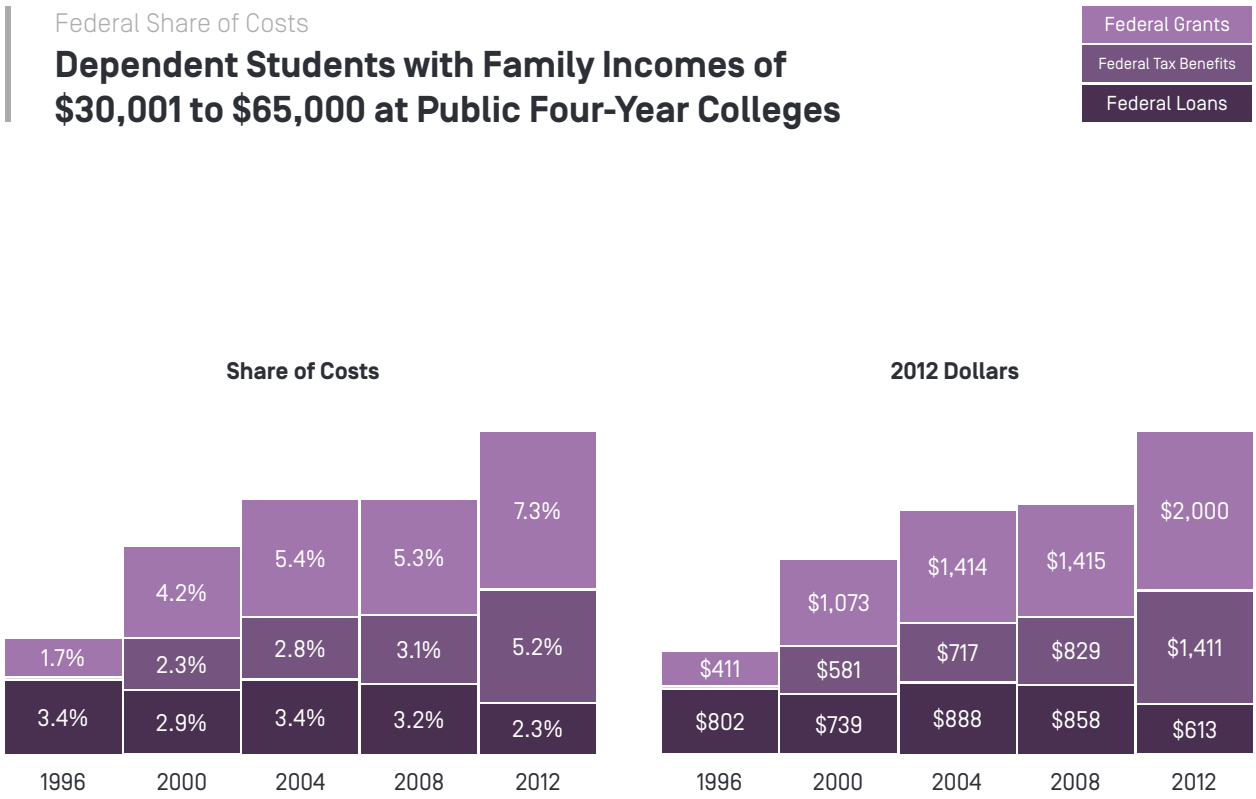
Federal Share of Costs

Dependent Students with Family Incomes of $30,000 or Less at Public Four-Year Colleges



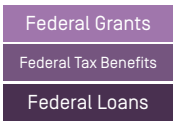
Federal Share of Costs

Dependent Students with Family Incomes of $30,001 to $65,000 at Public Four-Year Colleges

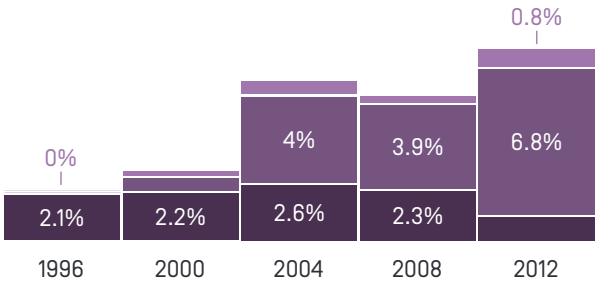


Federal Share of Costs

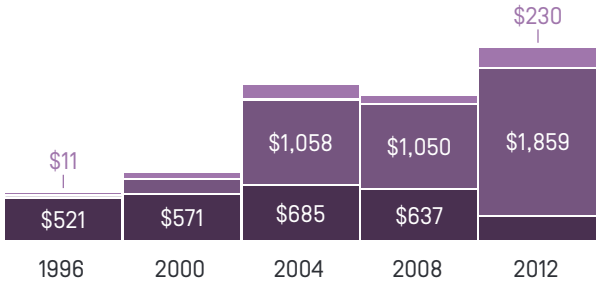
Dependent Students with Family Incomes of $65,001 to $106,000 at Public Four-Year Colleges



Share of Costs

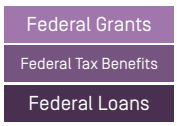


2012 Dollars

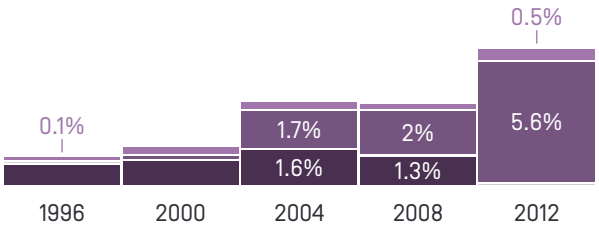


Federal Share of Costs

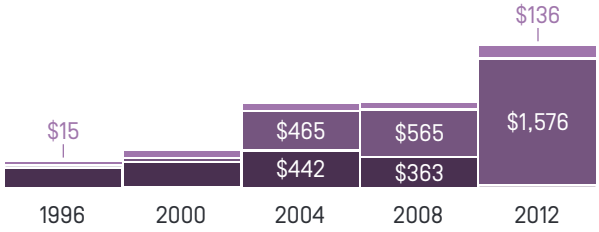
Dependent Students with Family Incomes Greater than $106,000 at Public Four-Year Colleges



Share of Costs

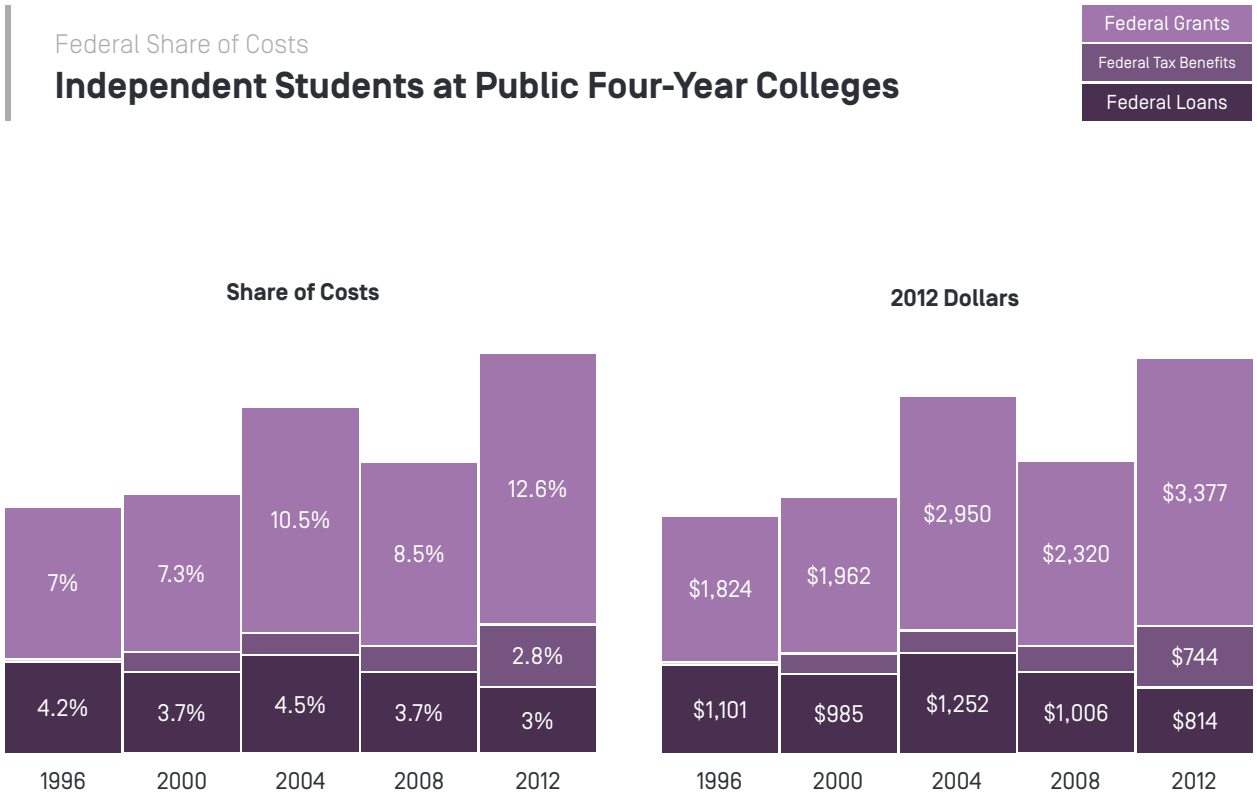


2012 Dollars



Federal Share of Costs

Independent Students at Public Four-Year Colleges

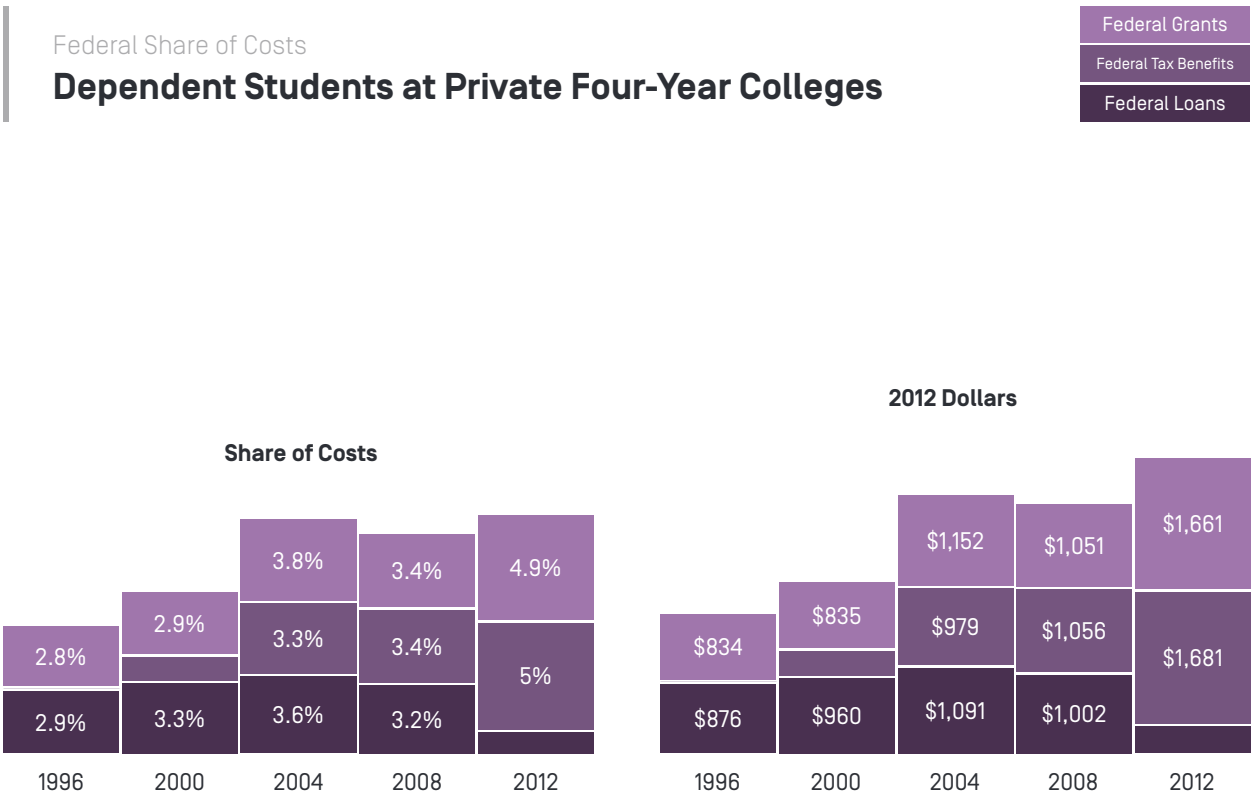


APPENDIX C: FEDERAL FINANCING OF COLLEGE COSTS

2. Private Four-Year Colleges

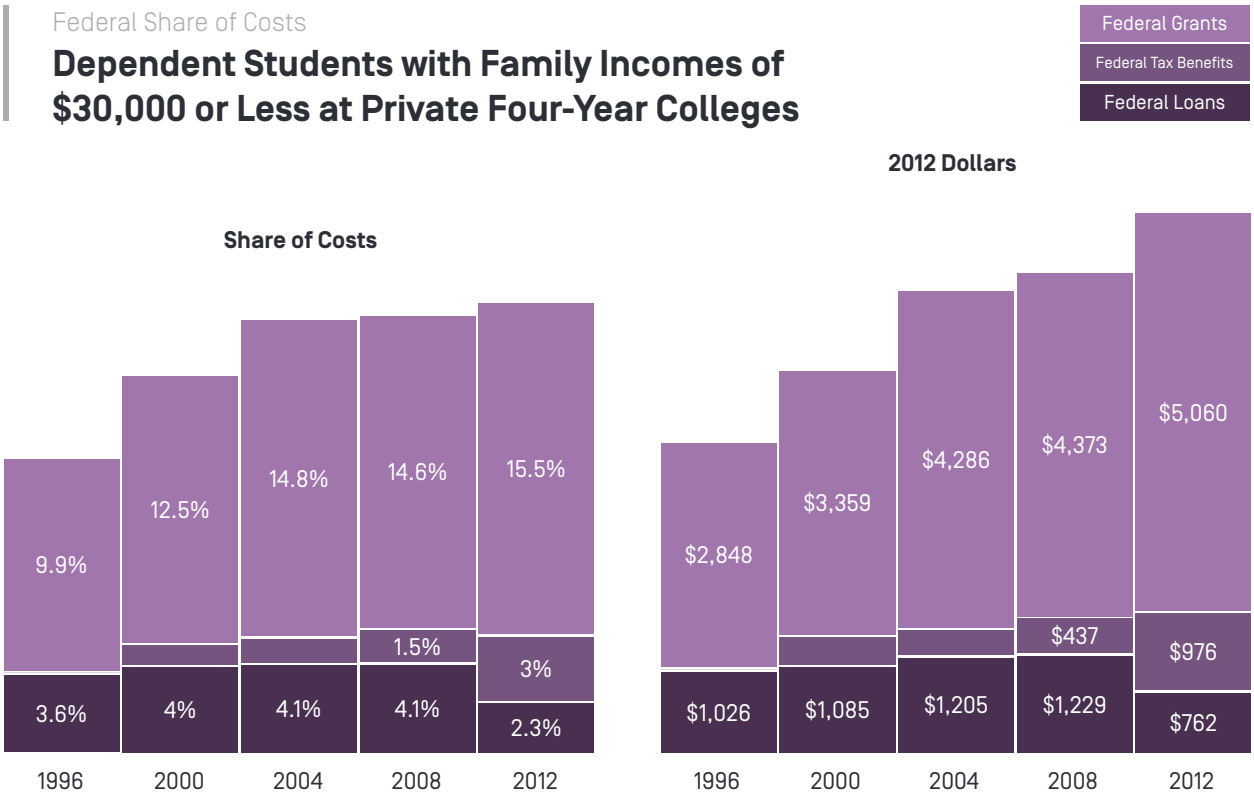
Federal Share of Costs

Dependent Students at Private Four-Year Colleges



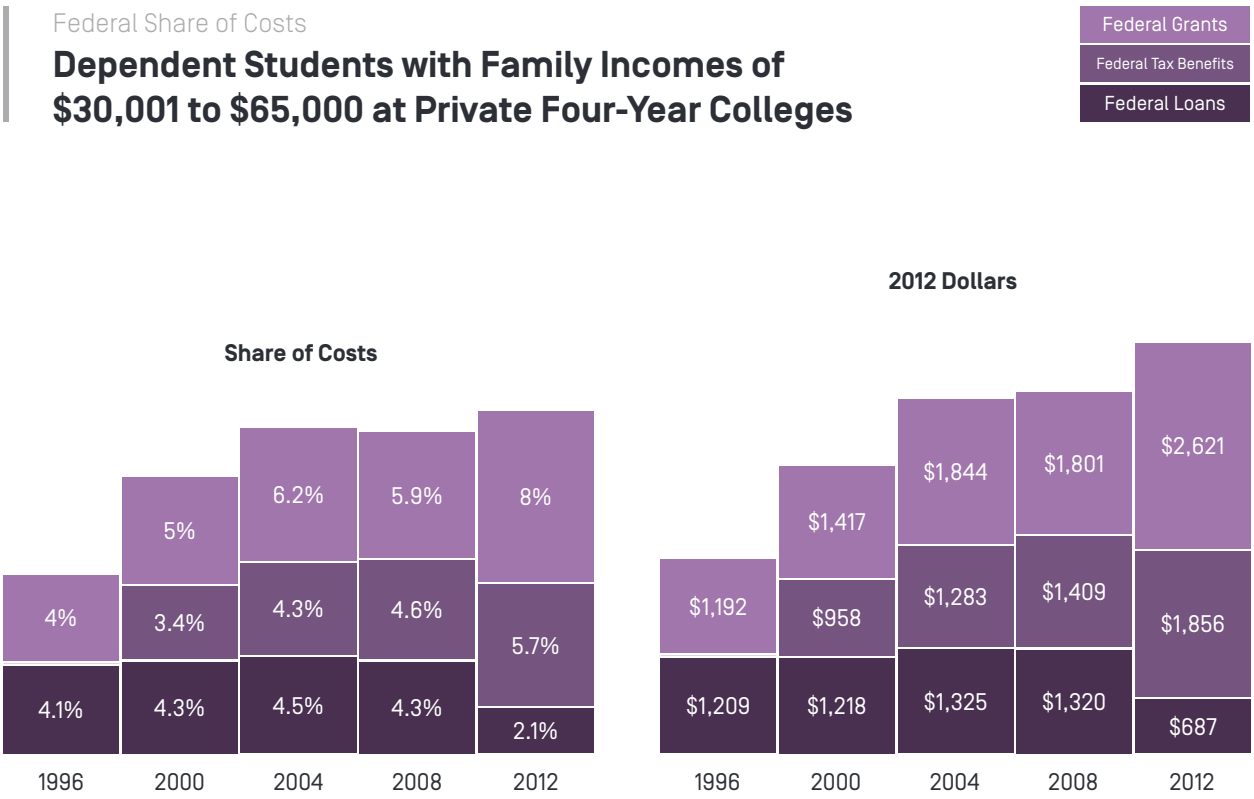
Federal Share of Costs

Dependent Students with Family Incomes of $30,000 or Less at Private Four-Year Colleges



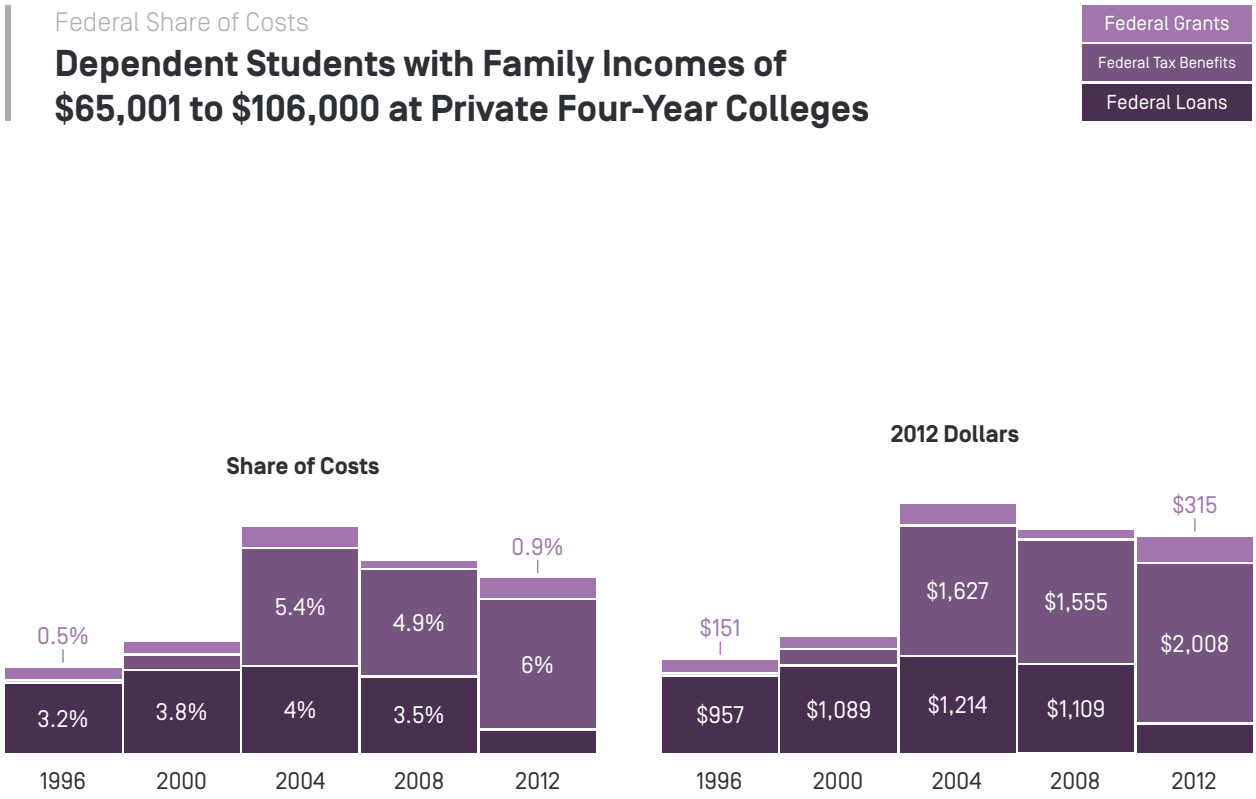
Federal Share of Costs

Dependent Students with Family Incomes of $30,001 to $65,000 at Private Four-Year Colleges



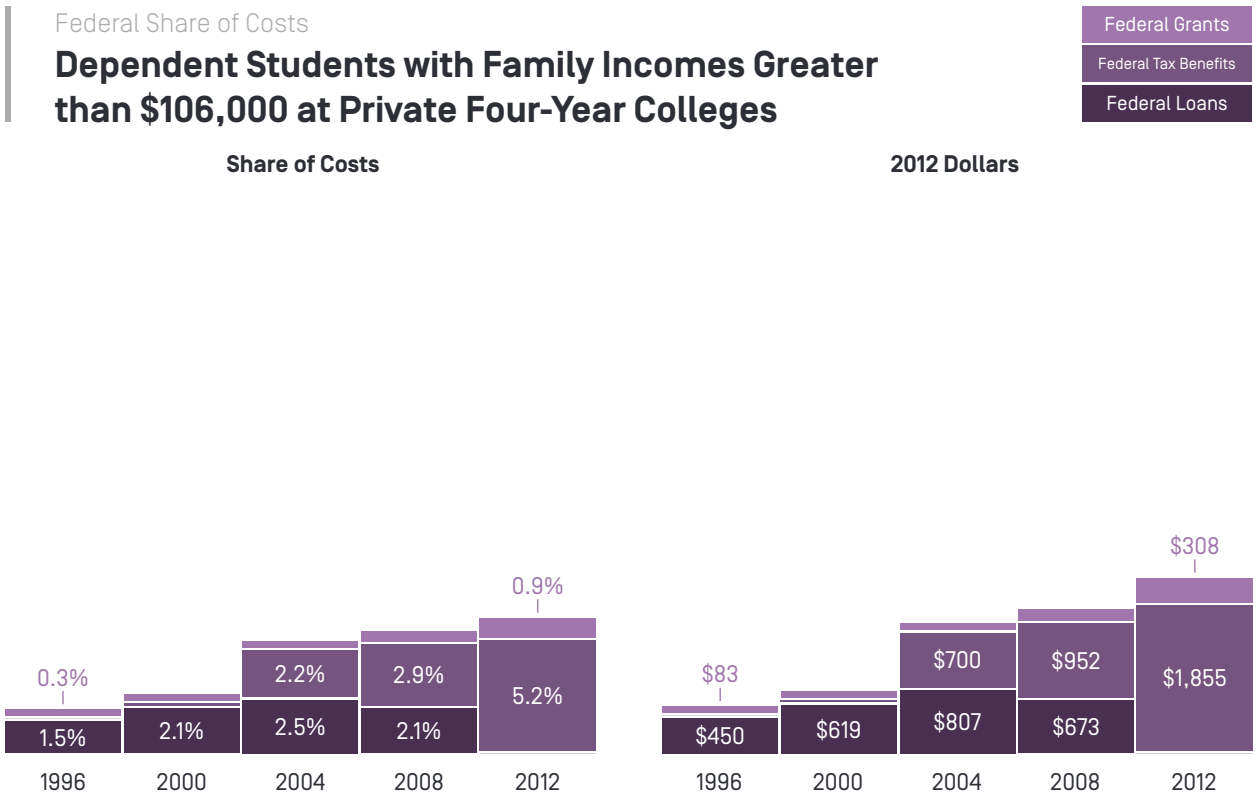
Federal Share of Costs

Dependent Students with Family Incomes of $65,001 to $106,000 at Private Four-Year Colleges



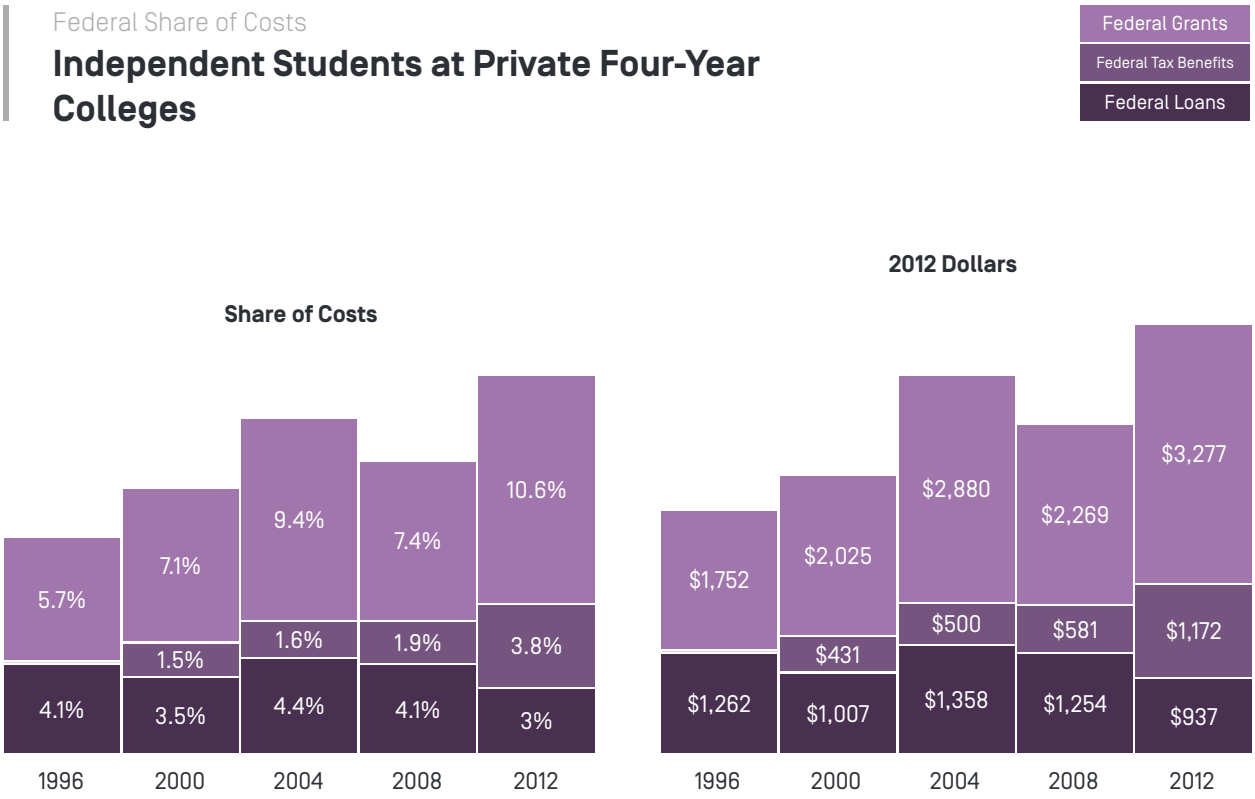
Federal Share of Costs

Dependent Students with Family Incomes Greater than $106,000 at Private Four-Year Colleges



Federal Share of Costs

Independent Students at Private Four-Year Colleges

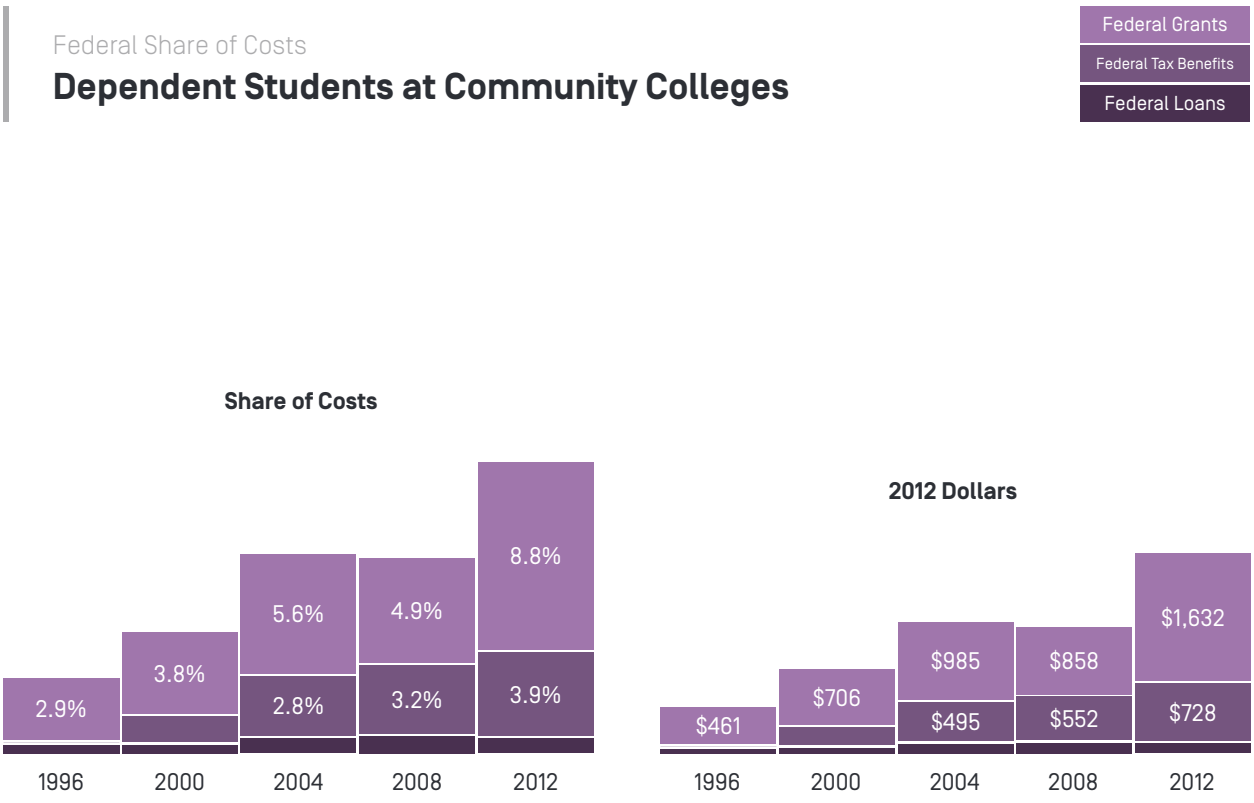


APPENDIX C: FEDERAL FINANCING OF COLLEGE COSTS

3. Community Colleges

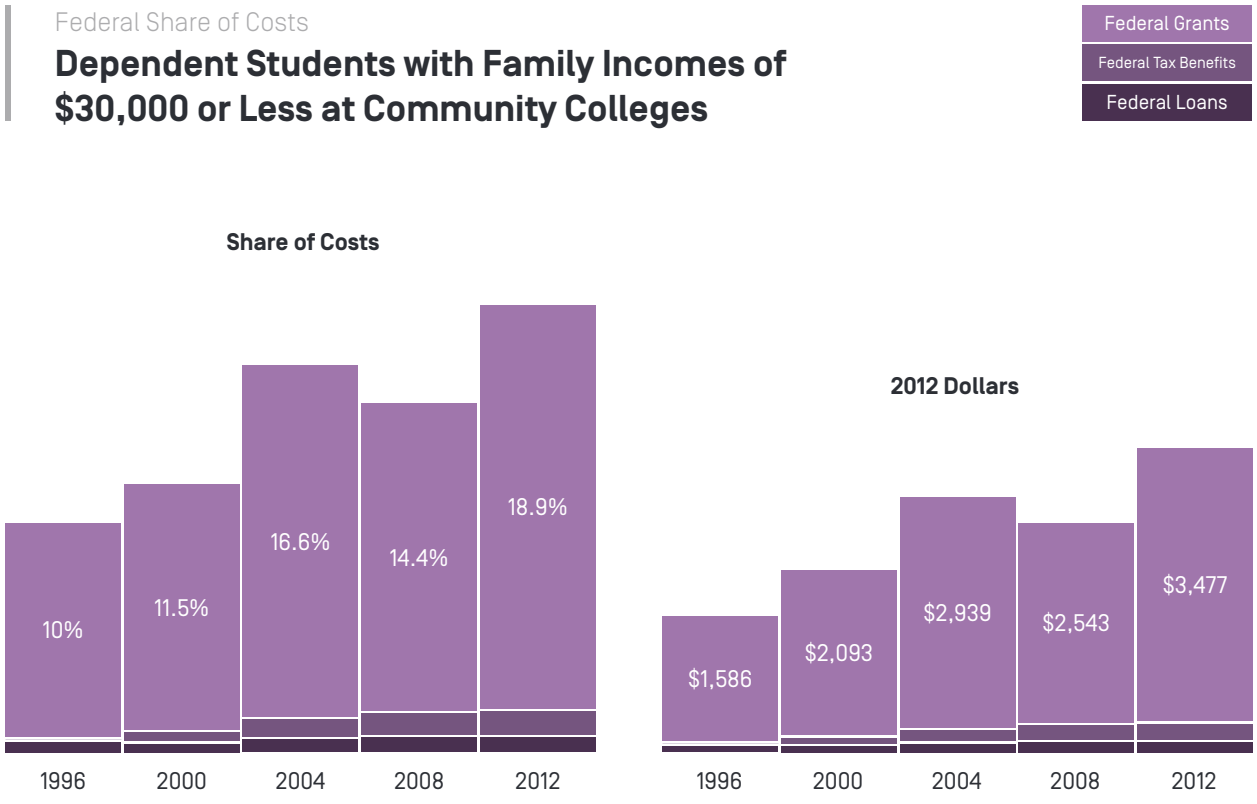
Federal Share of Costs

Dependent Students at Community Colleges



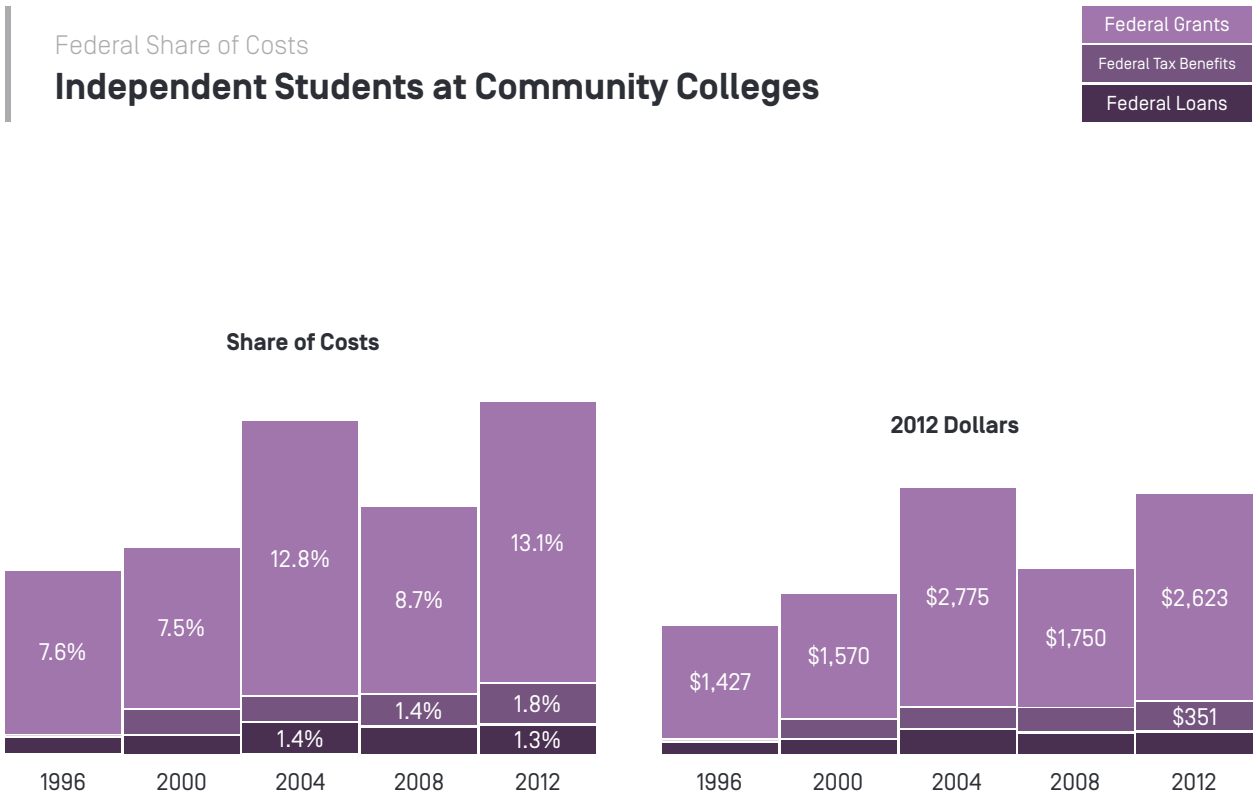
Federal Share of Costs

Dependent Students with Family Incomes of $30,000 or Less at Community Colleges



Federal Share of Costs

Independent Students at Community Colleges

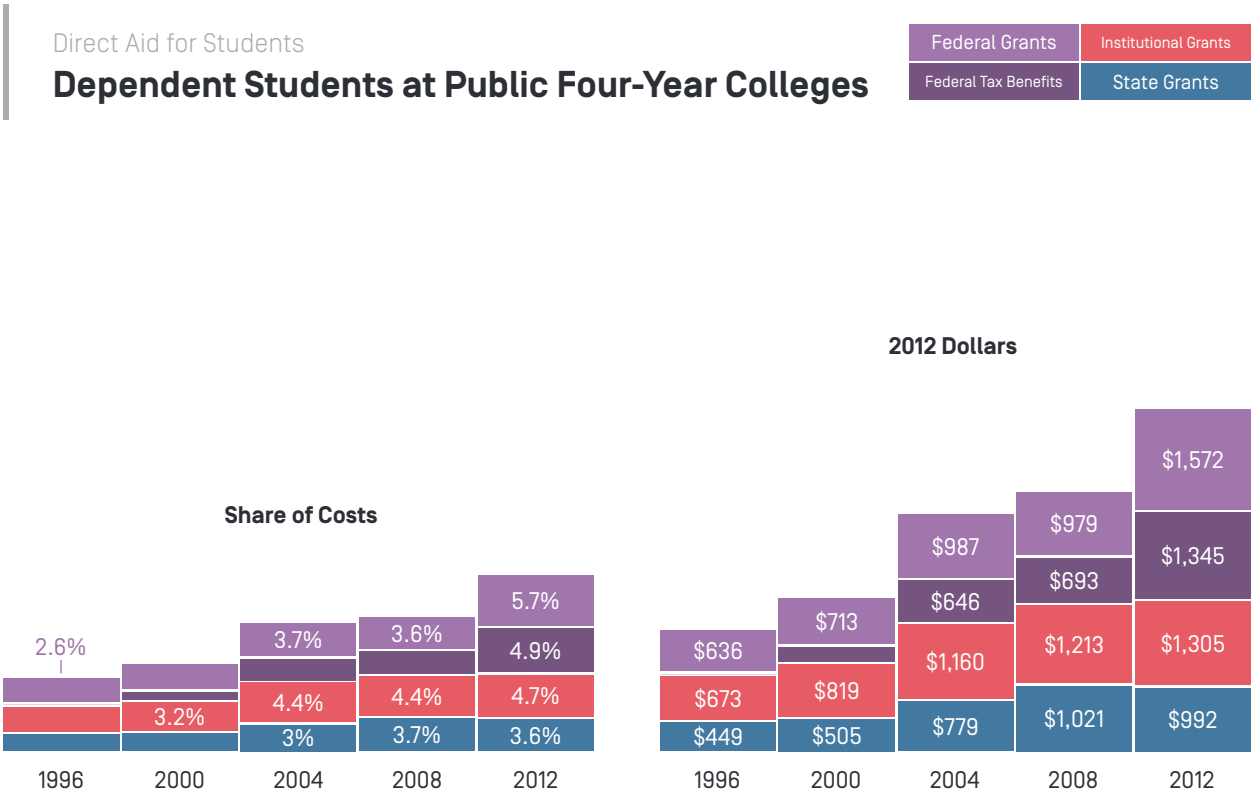


APPENDIX D:
DIRECT AID TO STUDENTS AT PUBLIC FOUR-YEAR COLLEGES

Public Four-Year Colleges

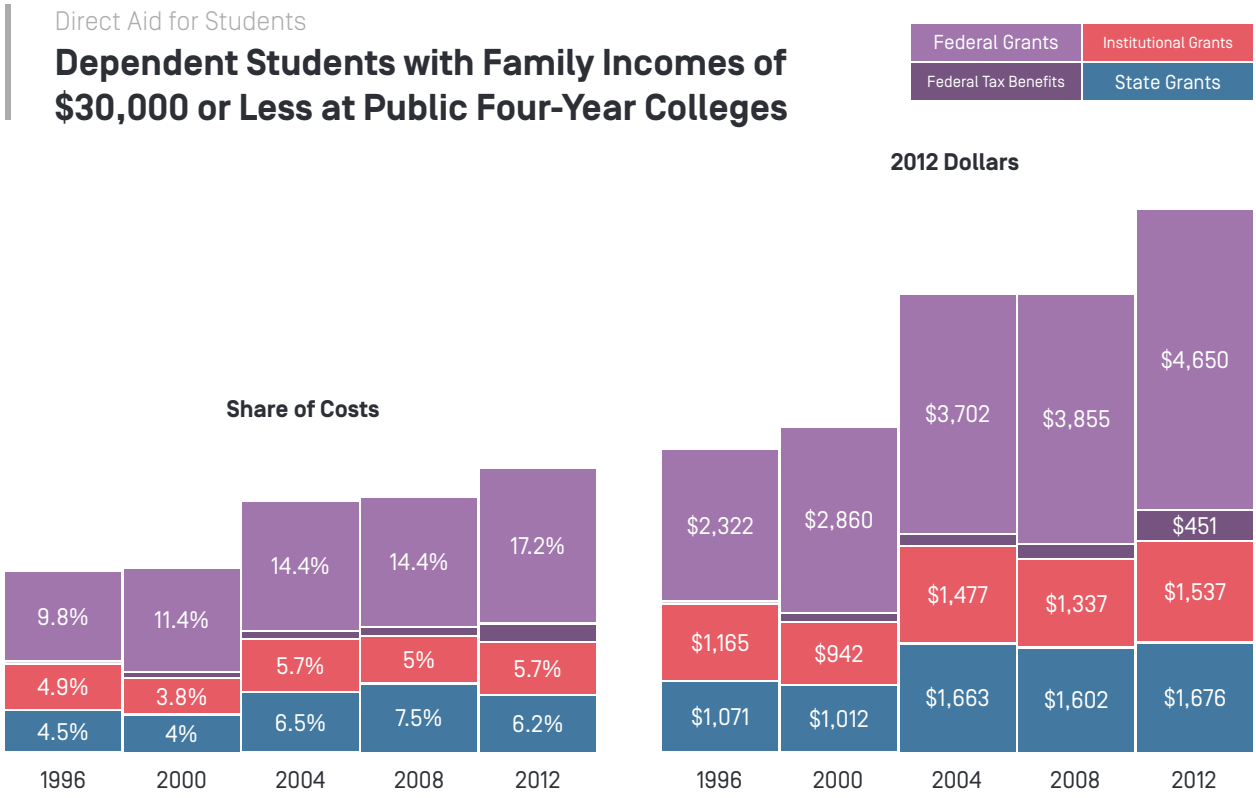
Direct Aid for Students

Dependent Students at Public Four-Year Colleges



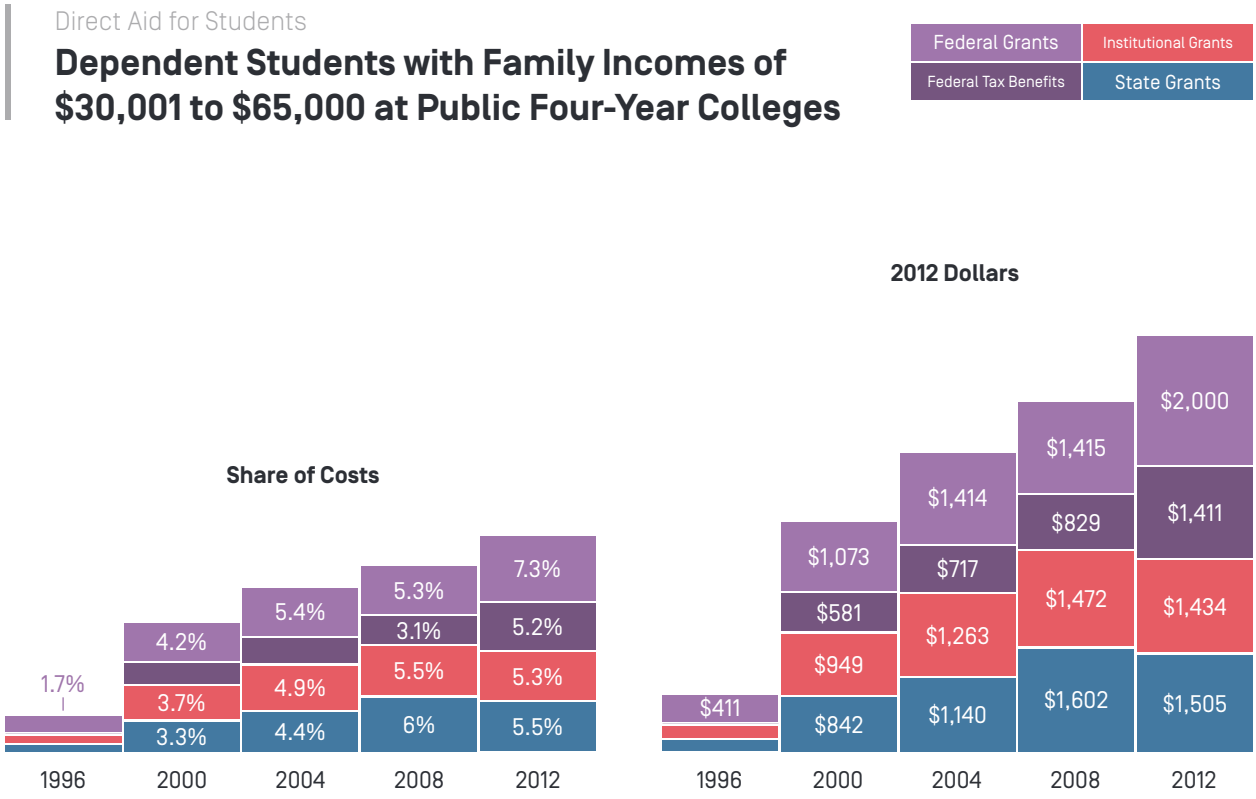
Direct Aid for Students

Dependent Students with Family Incomes of $30,000 or Less at Public Four-Year Colleges



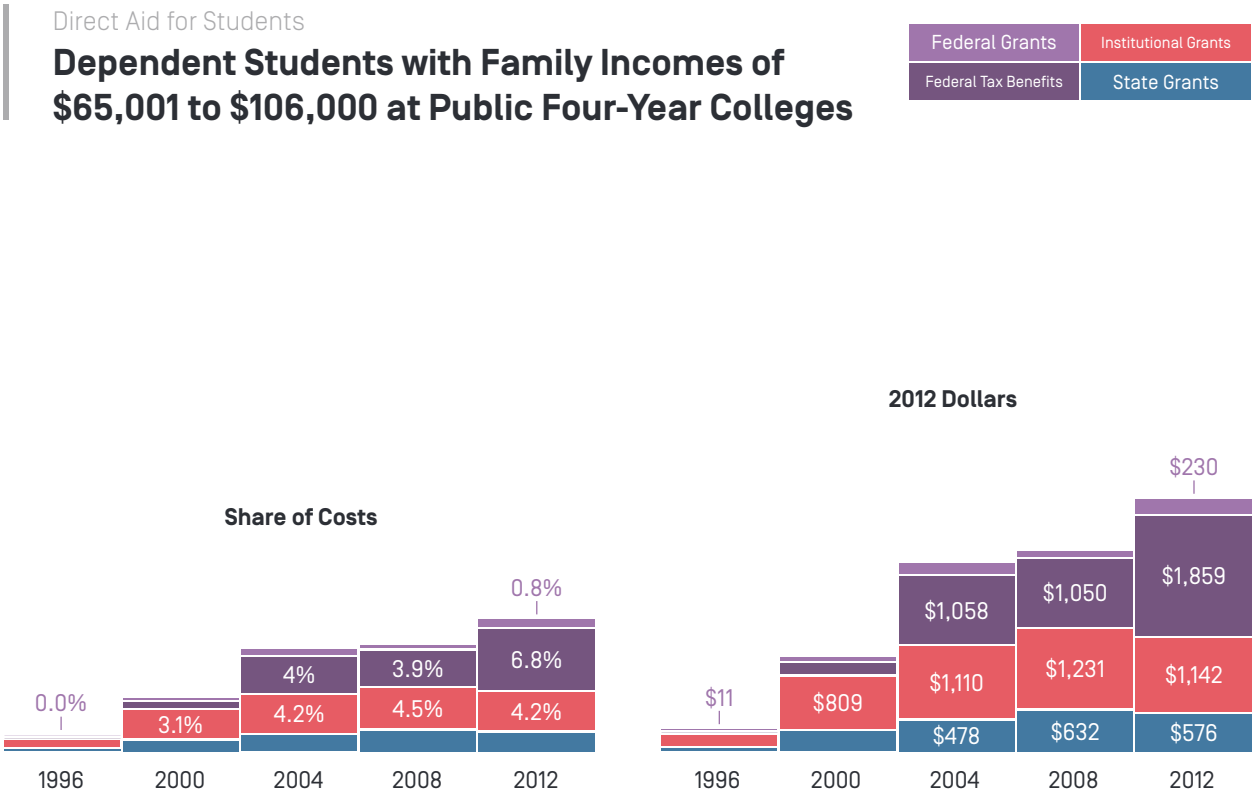
Direct Aid for Students

Dependent Students with Family Incomes of $30,001 to $65,000 at Public Four-Year Colleges



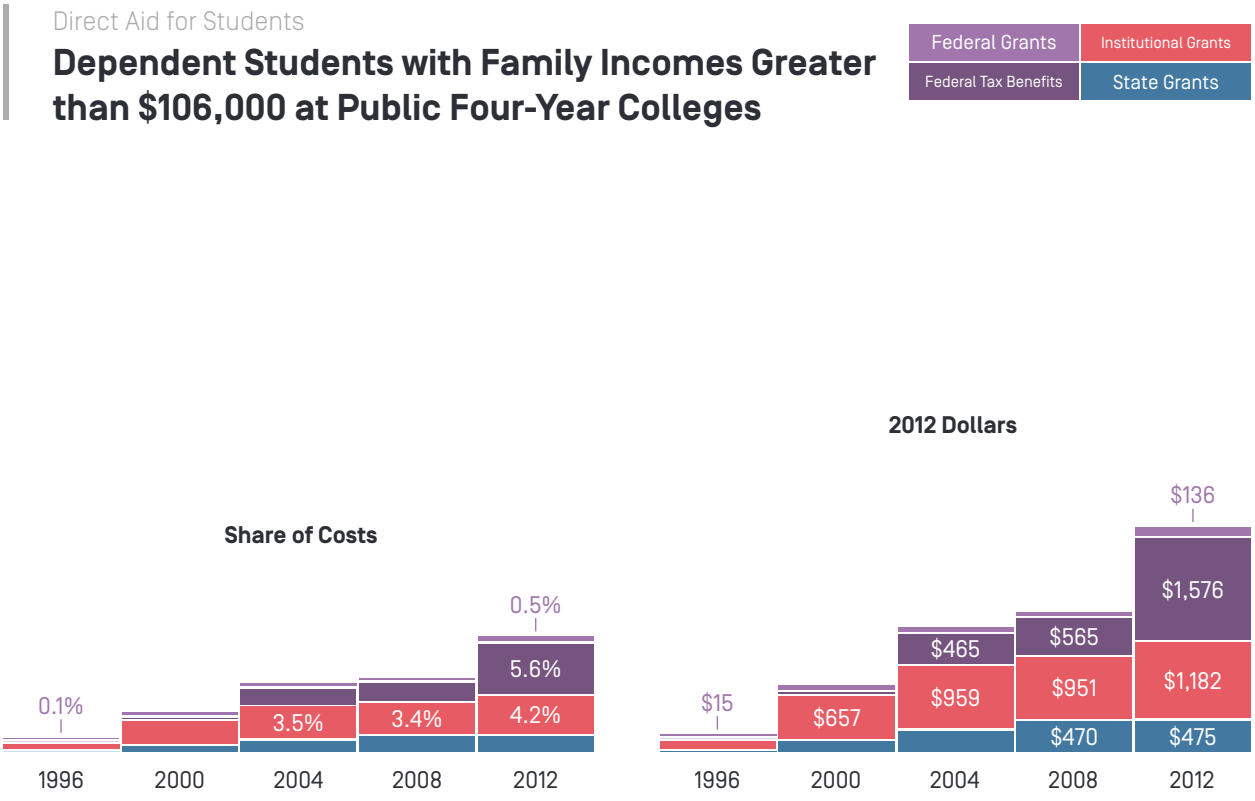
Direct Aid for Students

Dependent Students with Family Incomes of $65,001 to $106,000 at Public Four-Year Colleges



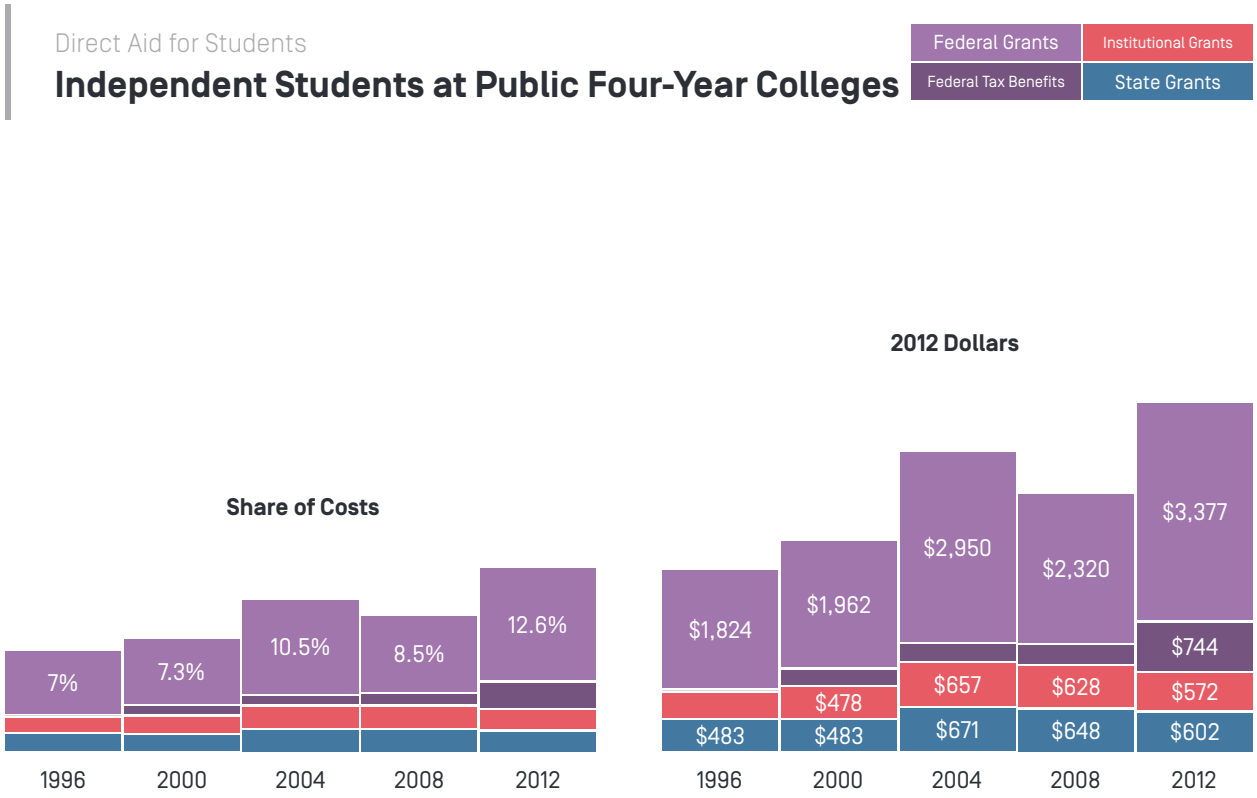
Direct Aid for Students

Dependent Students with Family Incomes Greater than $106,000 at Public Four-Year Colleges



Direct Aid for Students

Independent Students at Public Four-Year Colleges

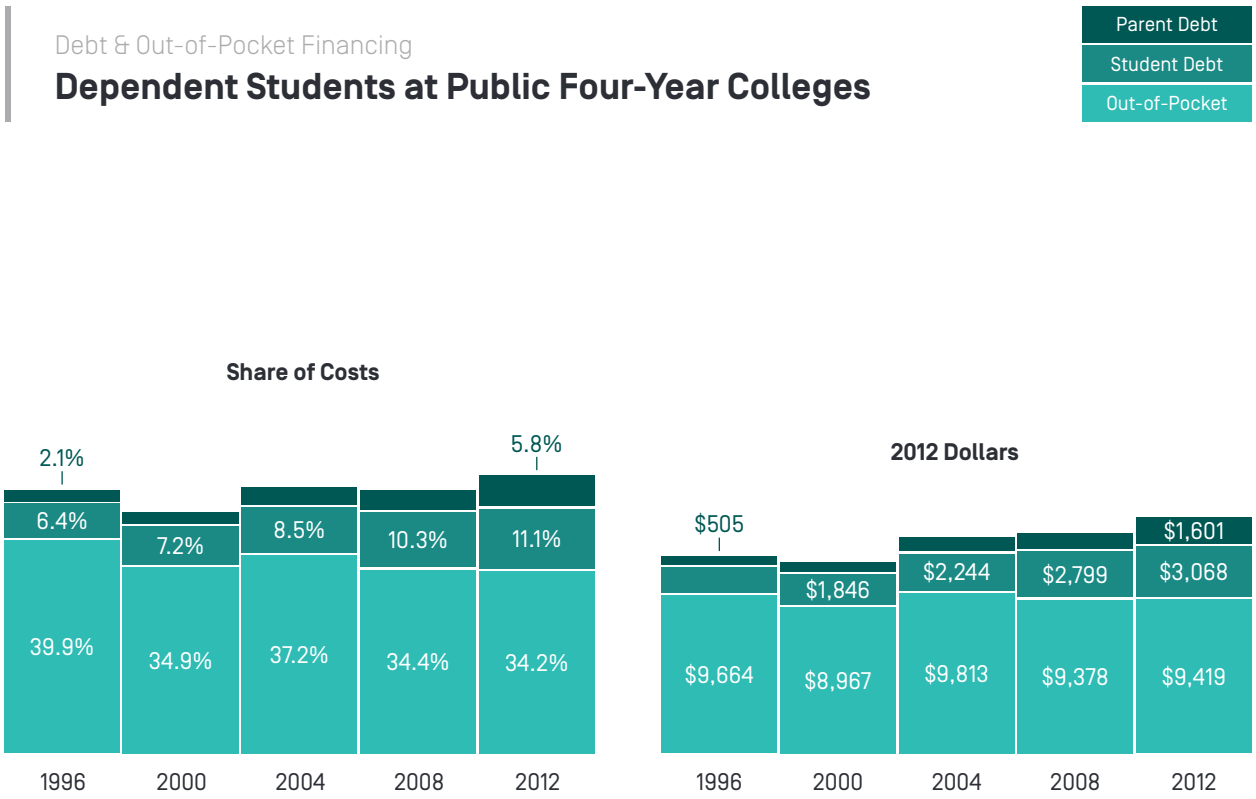


APPENDIX E:
DEBT & OUT-OF-POCKET FINANCING

1. Public Four-Year Colleges

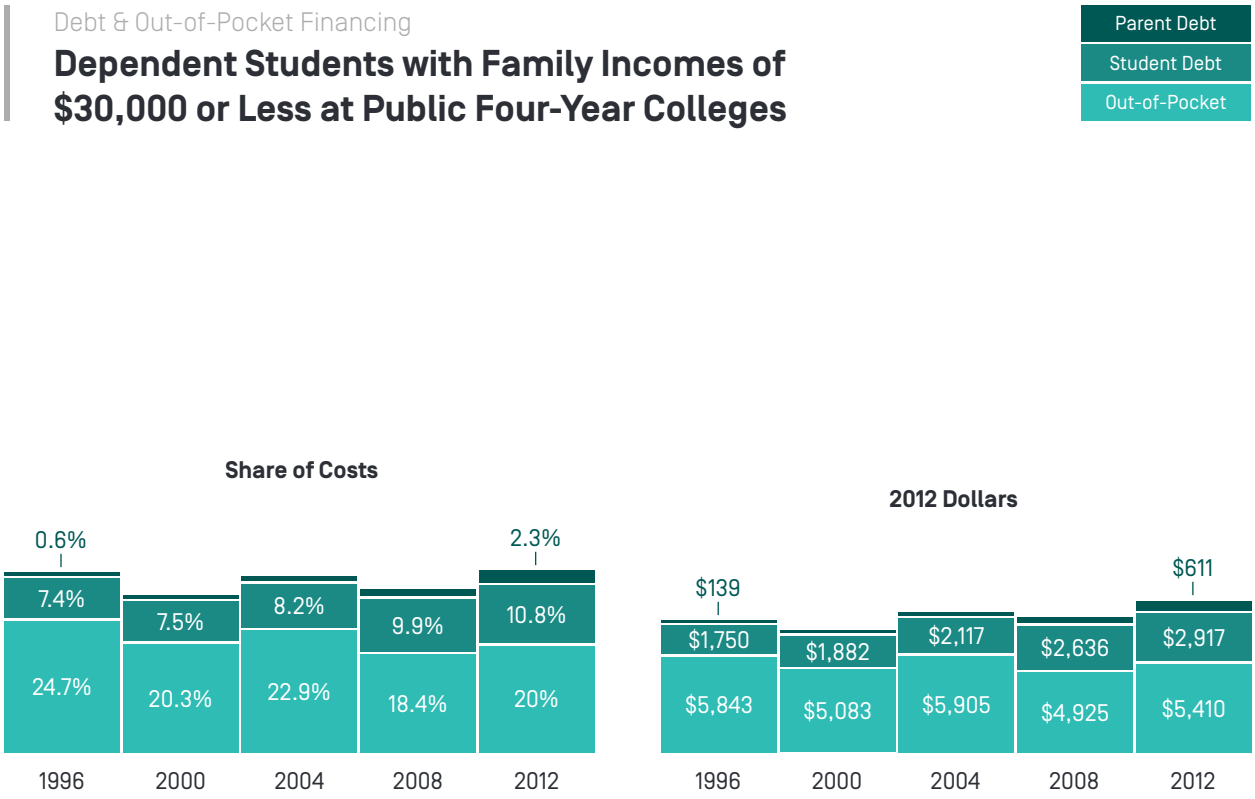
Debt & Out-of-Pocket Financing

Dependent Students at Public Four-Year Colleges



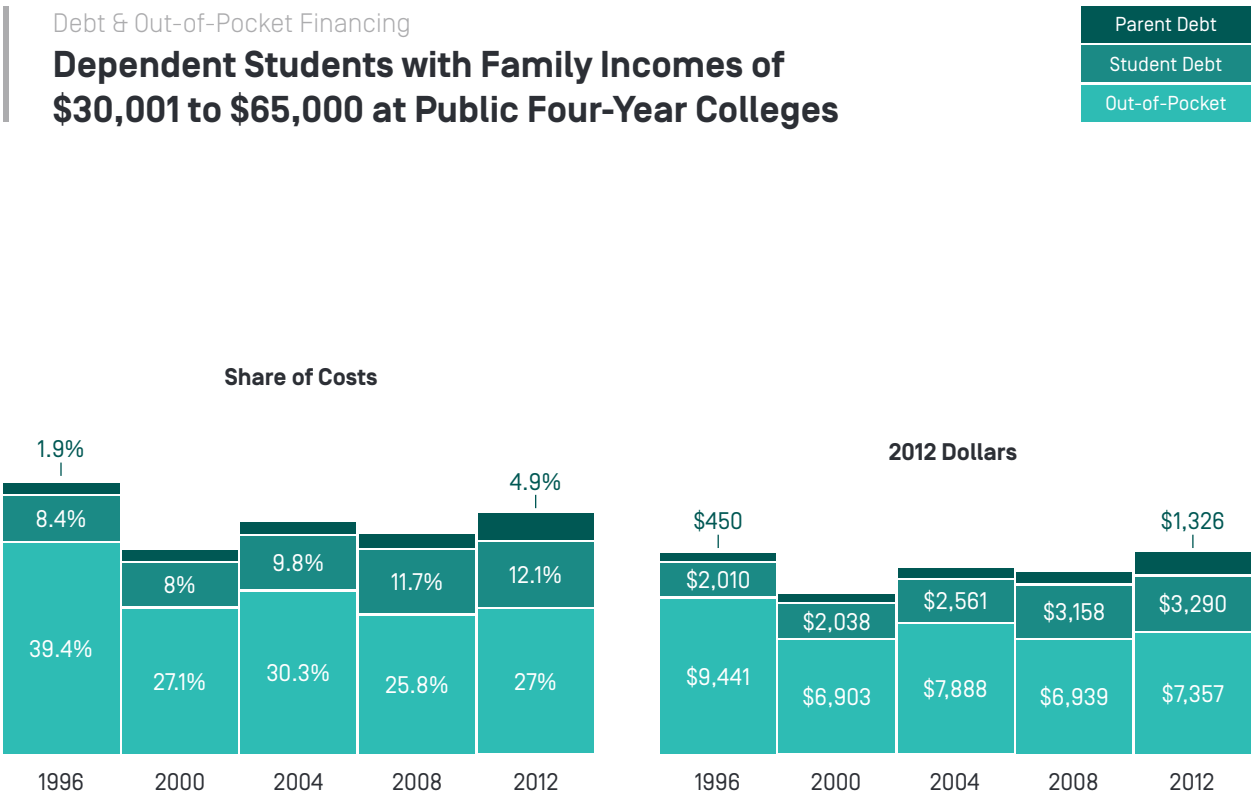
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $30,000 or Less at Public Four-Year Colleges



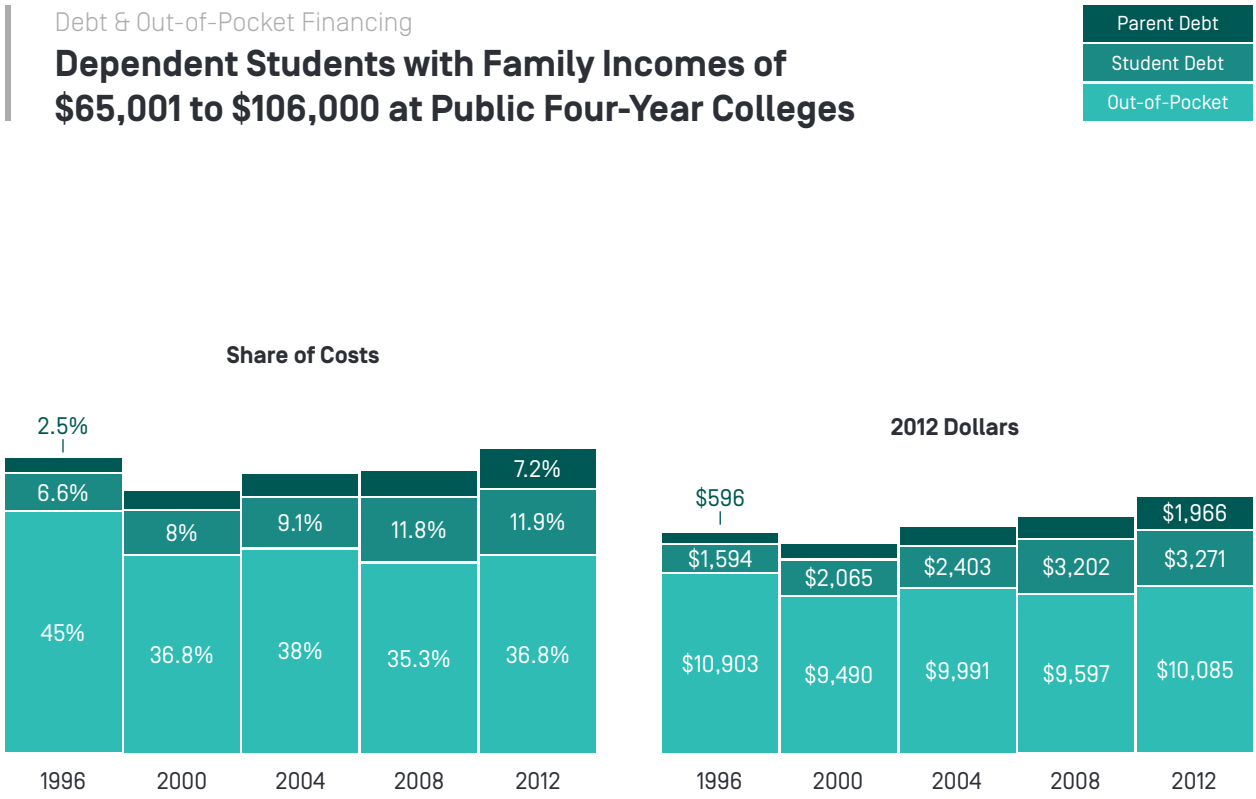
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $30,001 to $65,000 at Public Four-Year Colleges



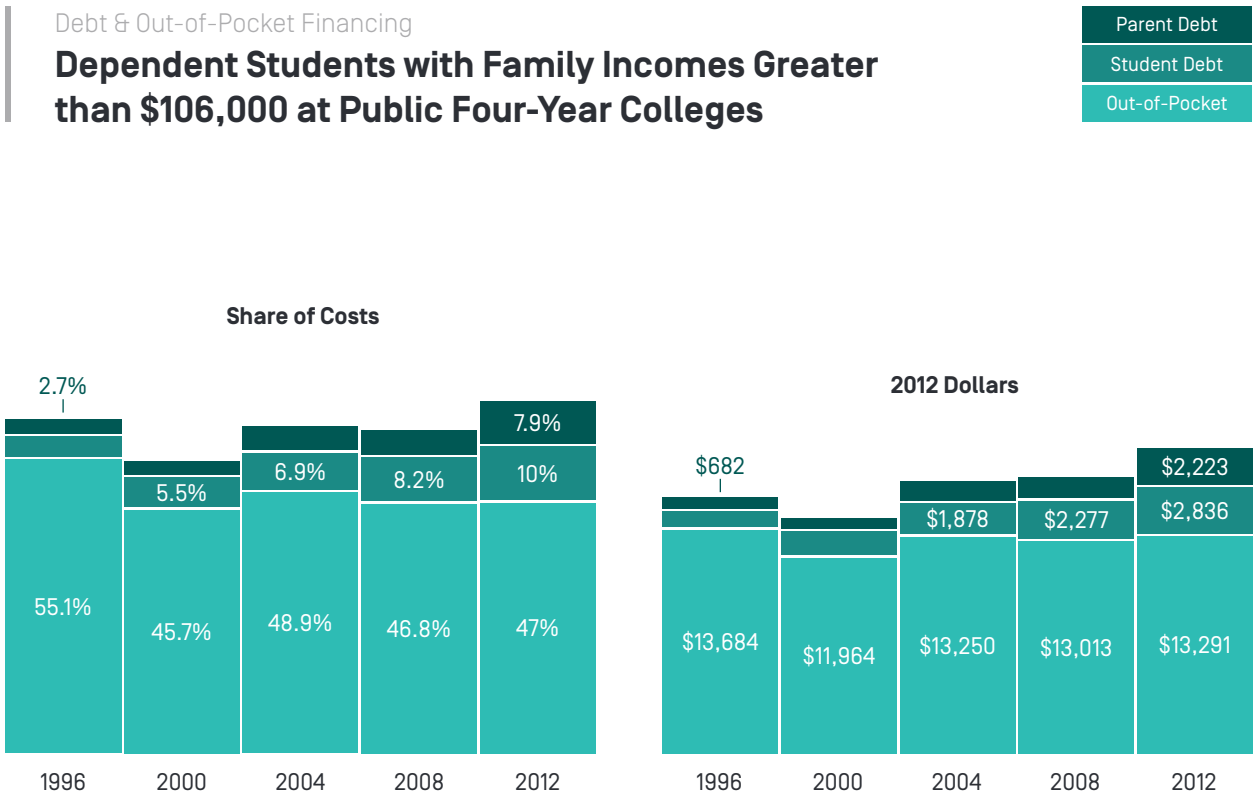
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $65,001 to $106,000 at Public Four-Year Colleges



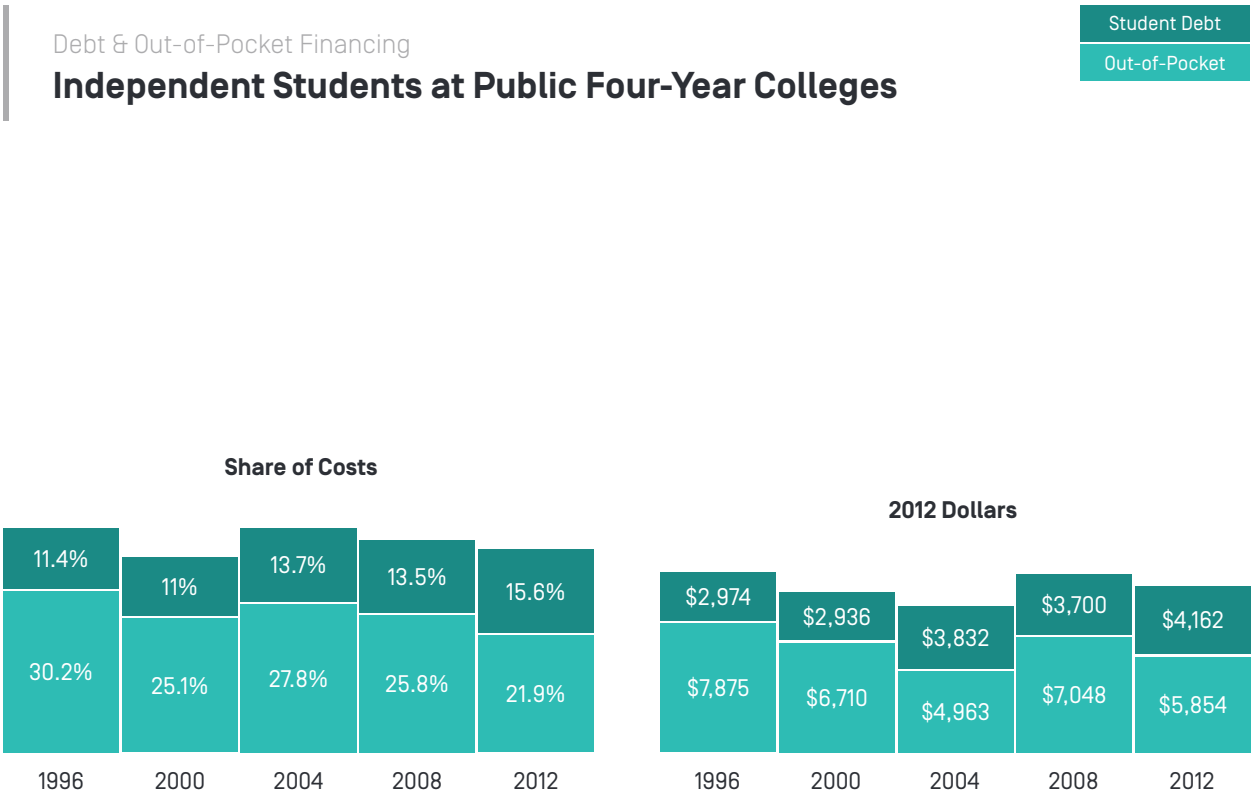
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes Greater than $106,000 at Public Four-Year Colleges



Debt & Out-of-Pocket Financing

Independent Students at Public Four-Year Colleges

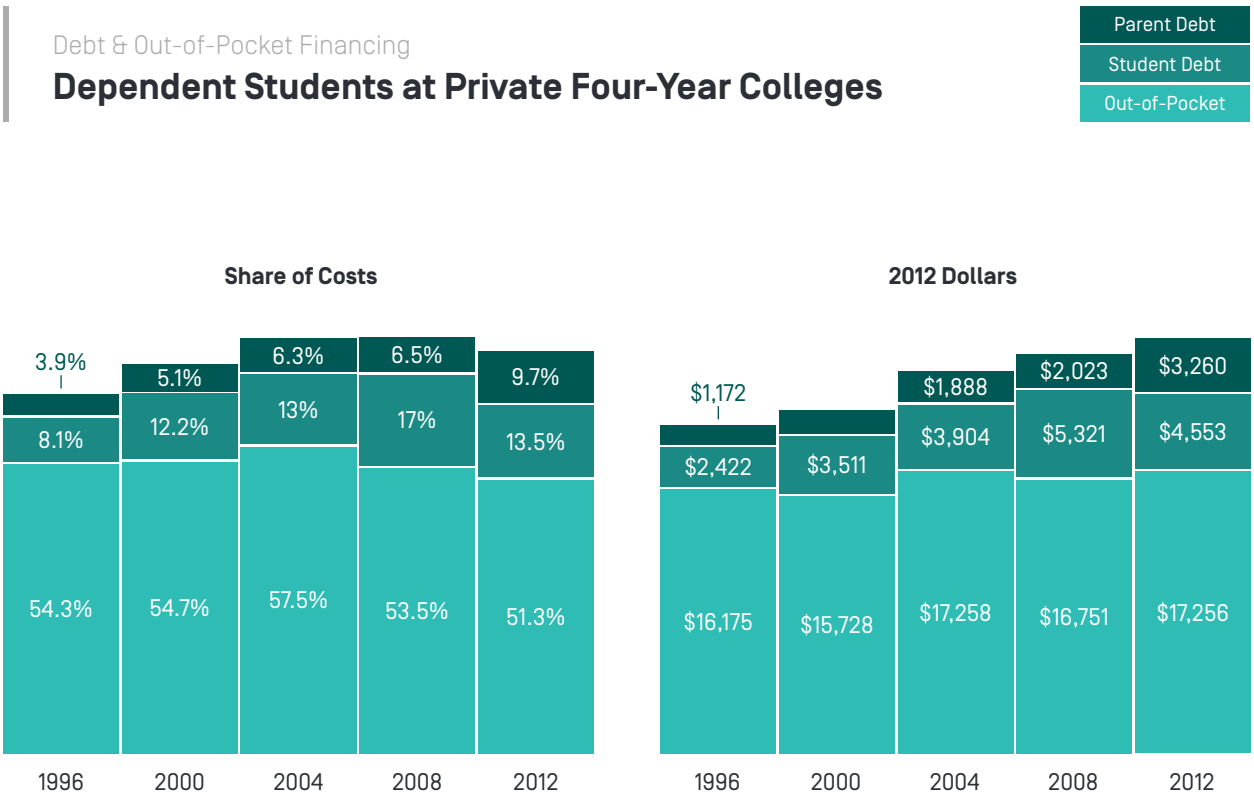


APPENDIX E:
DEBT & OUT-OF-POCKET FINANCING

2. Private Four-Year Colleges

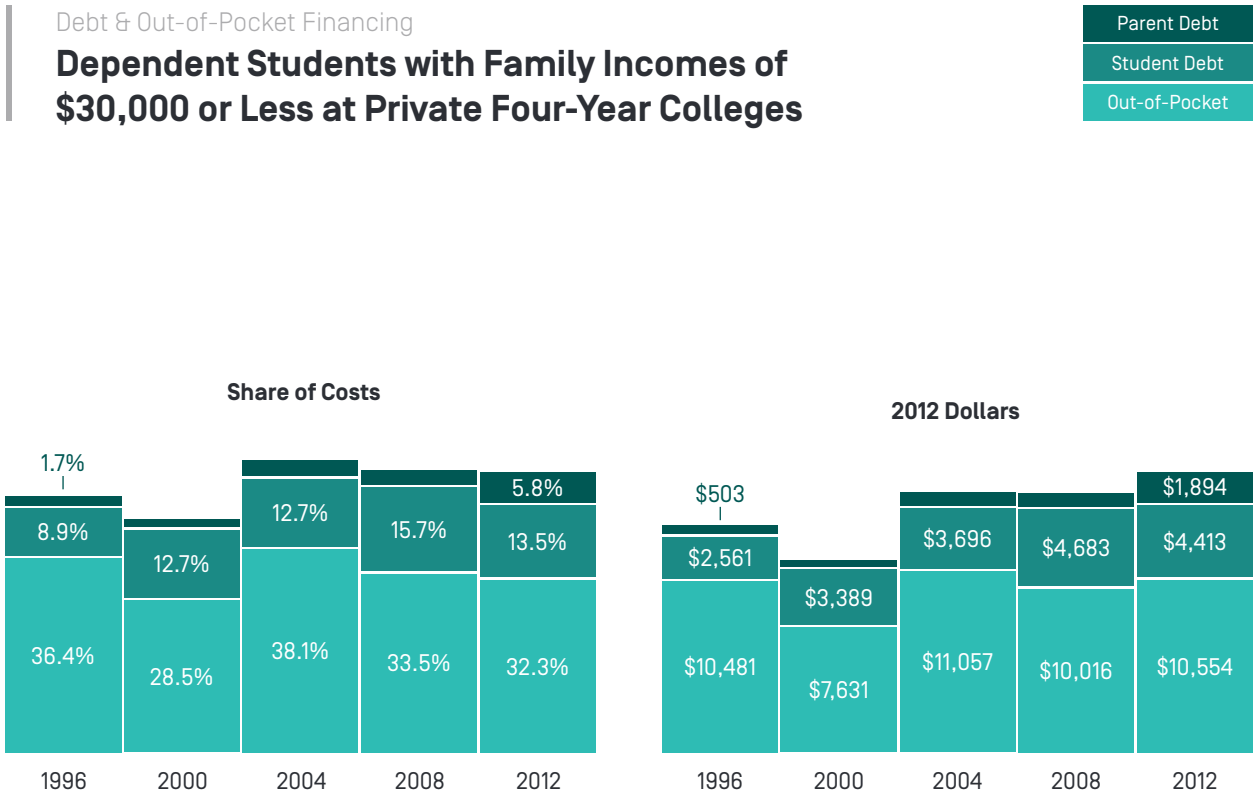
Debt & Out-of-Pocket Financing

Dependent Students at Private Four-Year Colleges



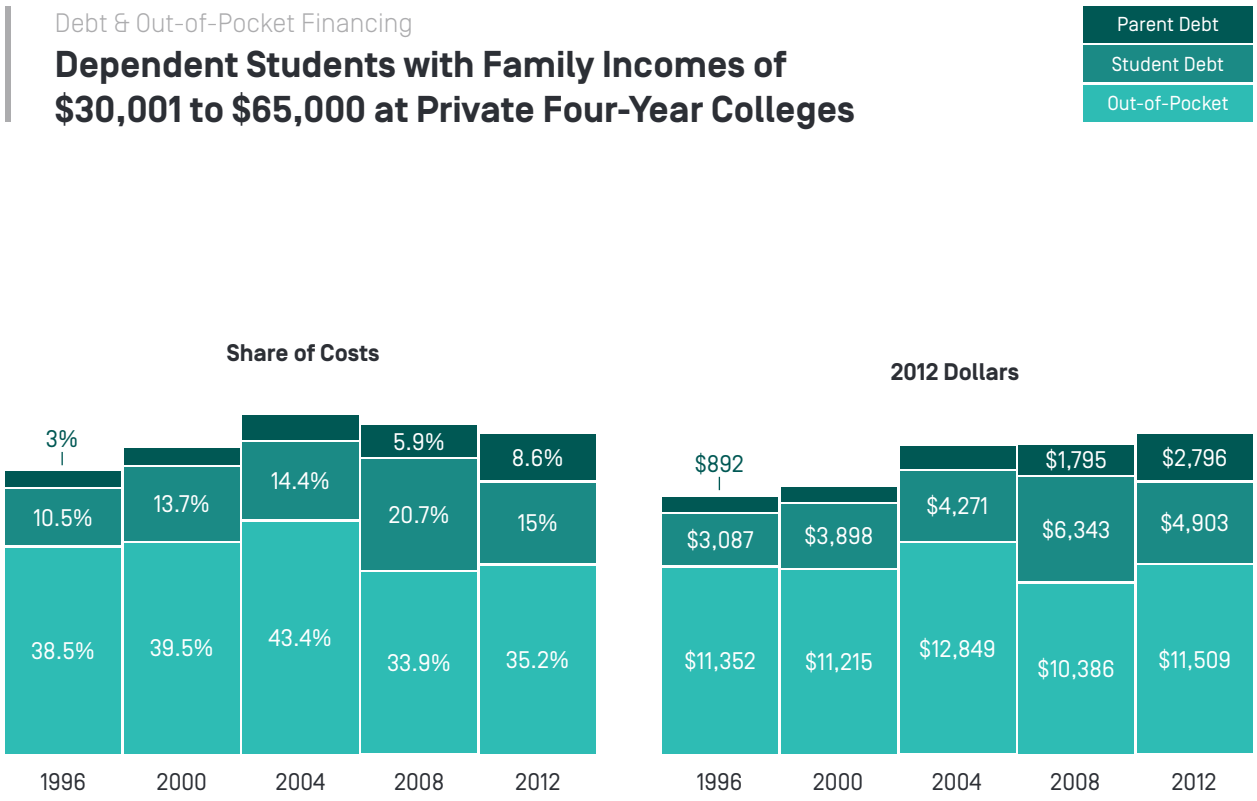
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $30,000 or Less at Private Four-Year Colleges



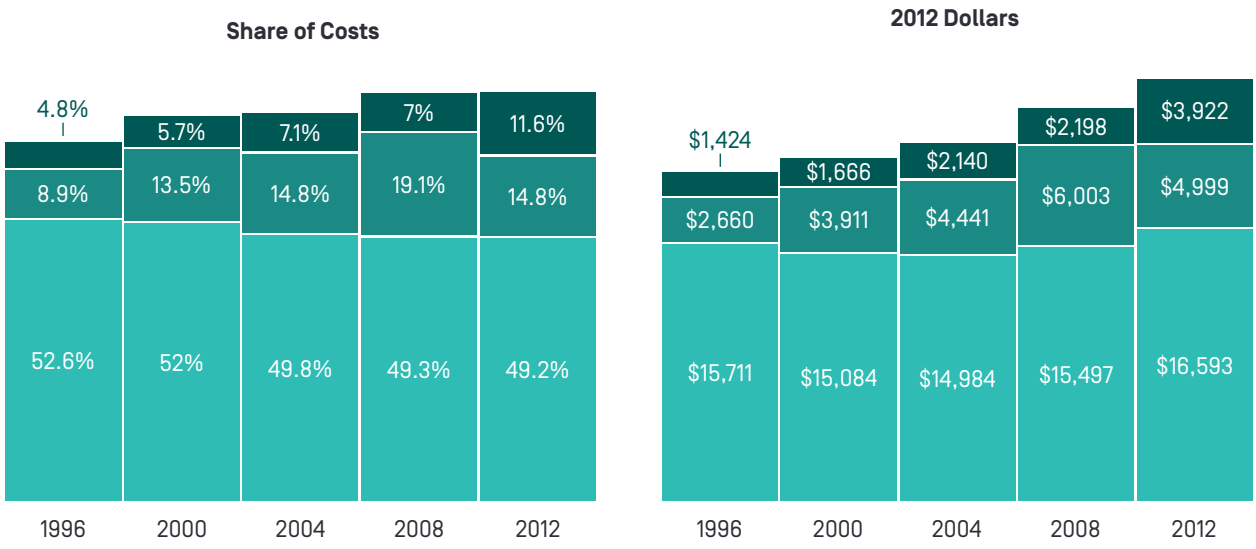
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $30,001 to $65,000 at Private Four-Year Colleges



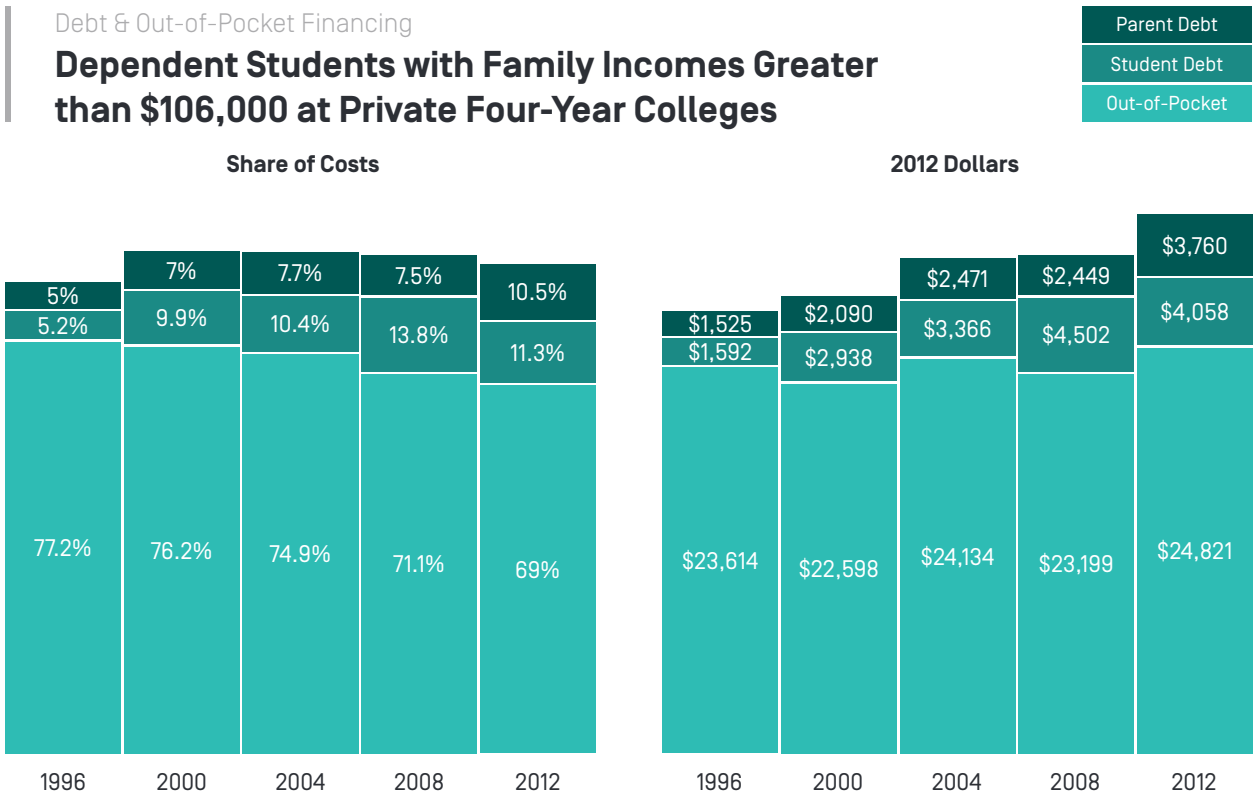
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $65,001 to $106,000 at Private Four-Year Colleges



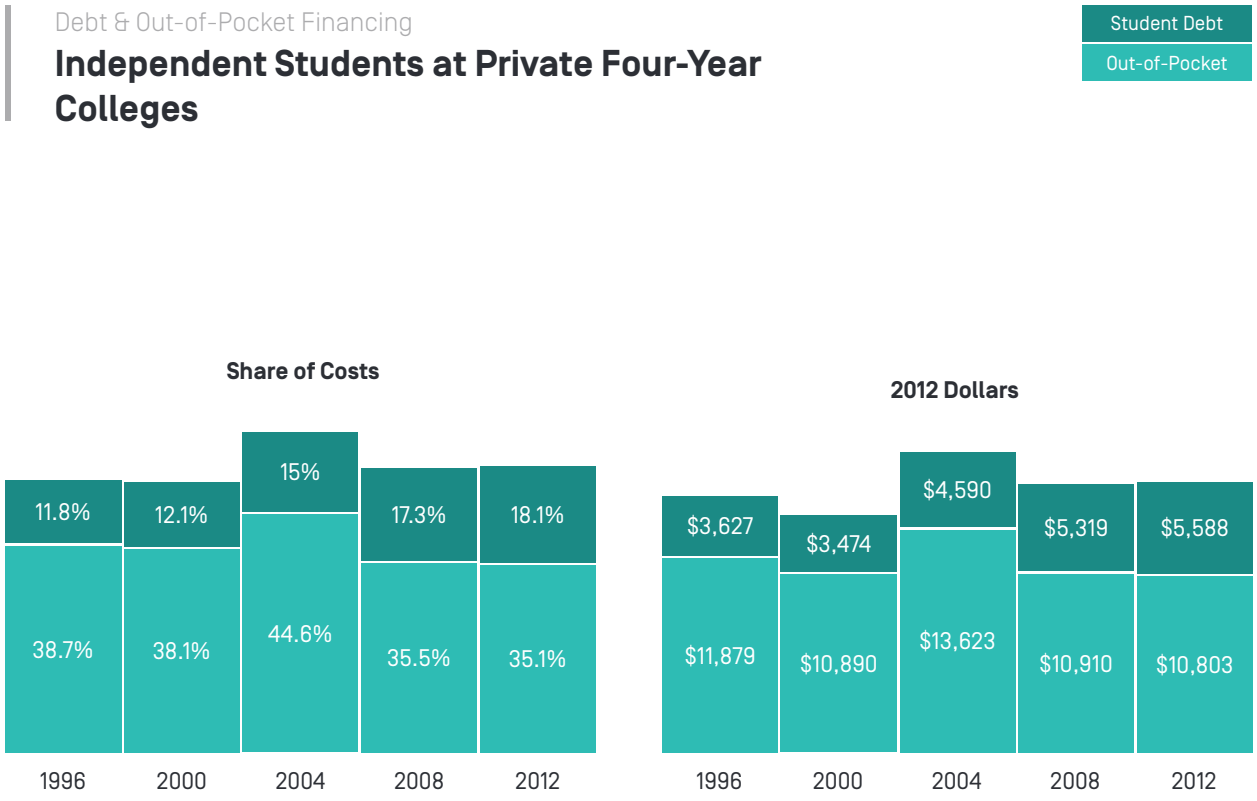
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes Greater than $106,000 at Private Four-Year Colleges



Debt & Out-of-Pocket Financing

Independent Students at Private Four-Year Colleges

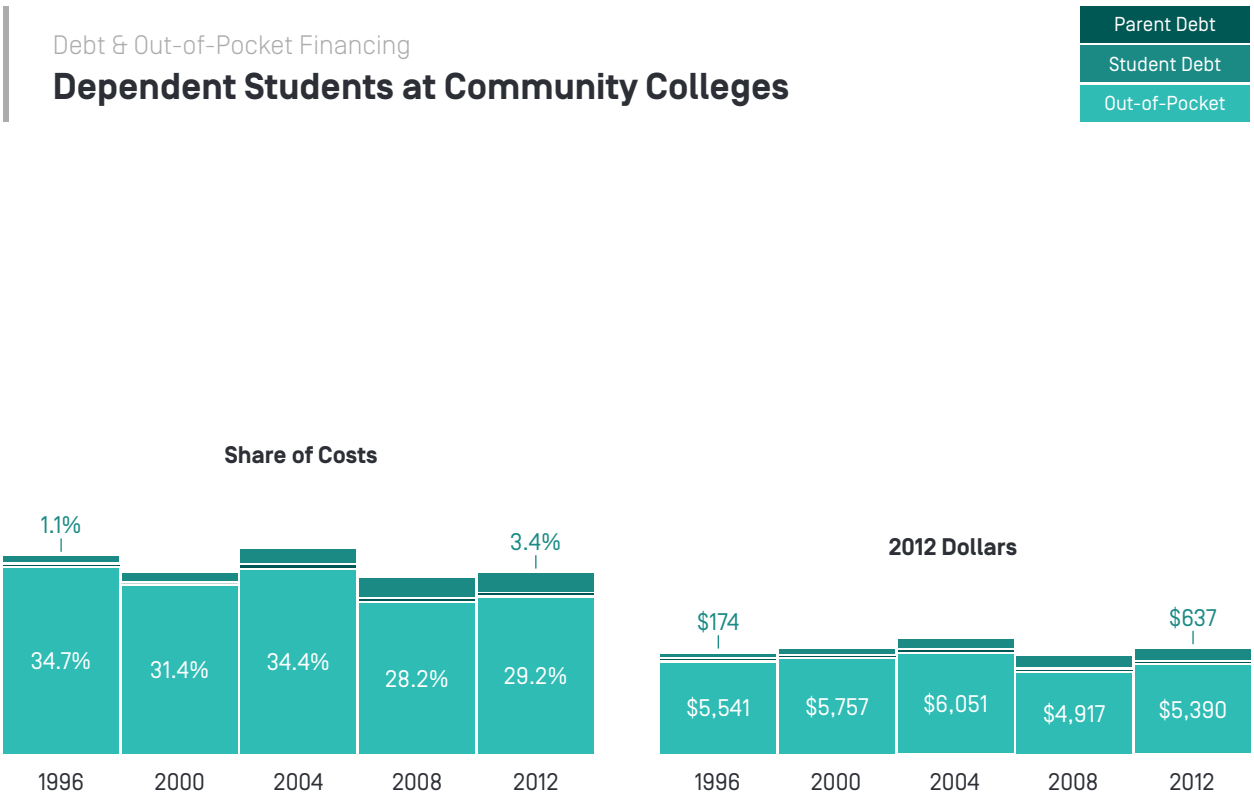


APPENDIX E:
DEBT & OUT-OF-POCKET FINANCING

3. Community Colleges

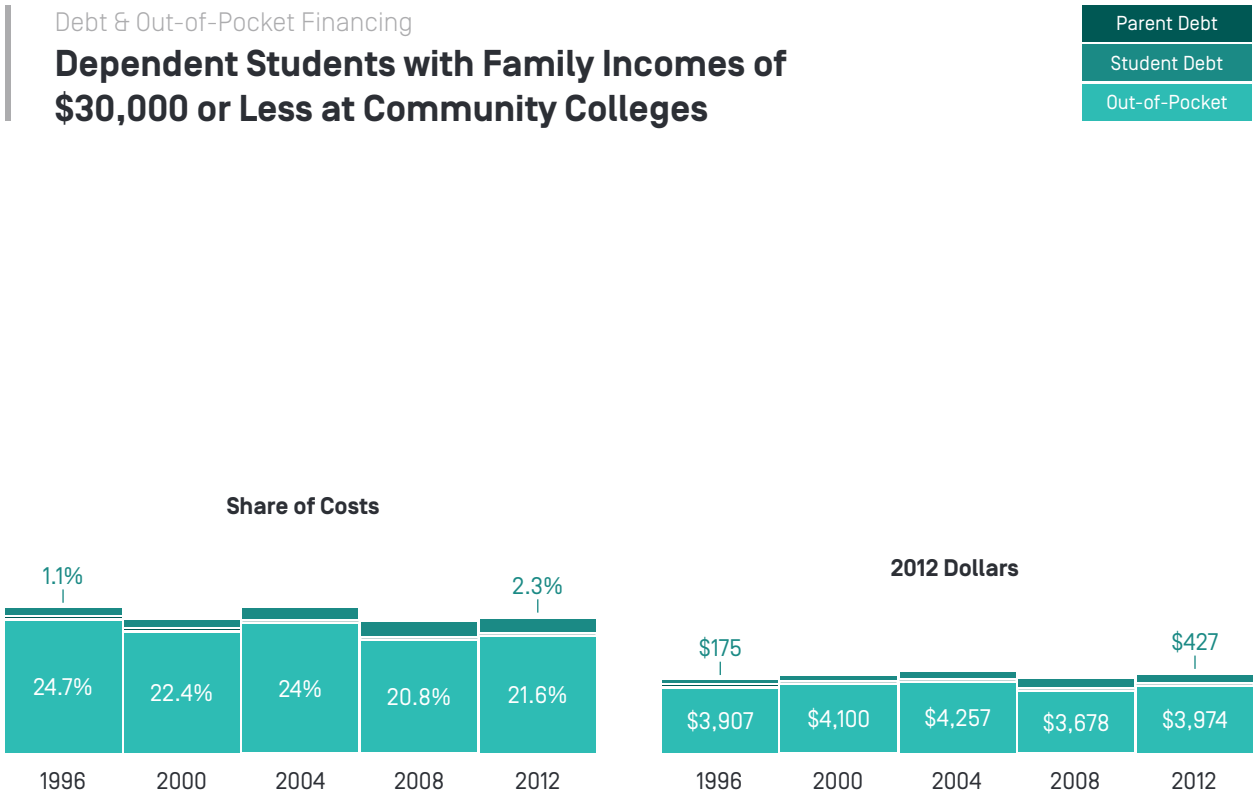
Debt & Out-of-Pocket Financing

Dependent Students at Community Colleges



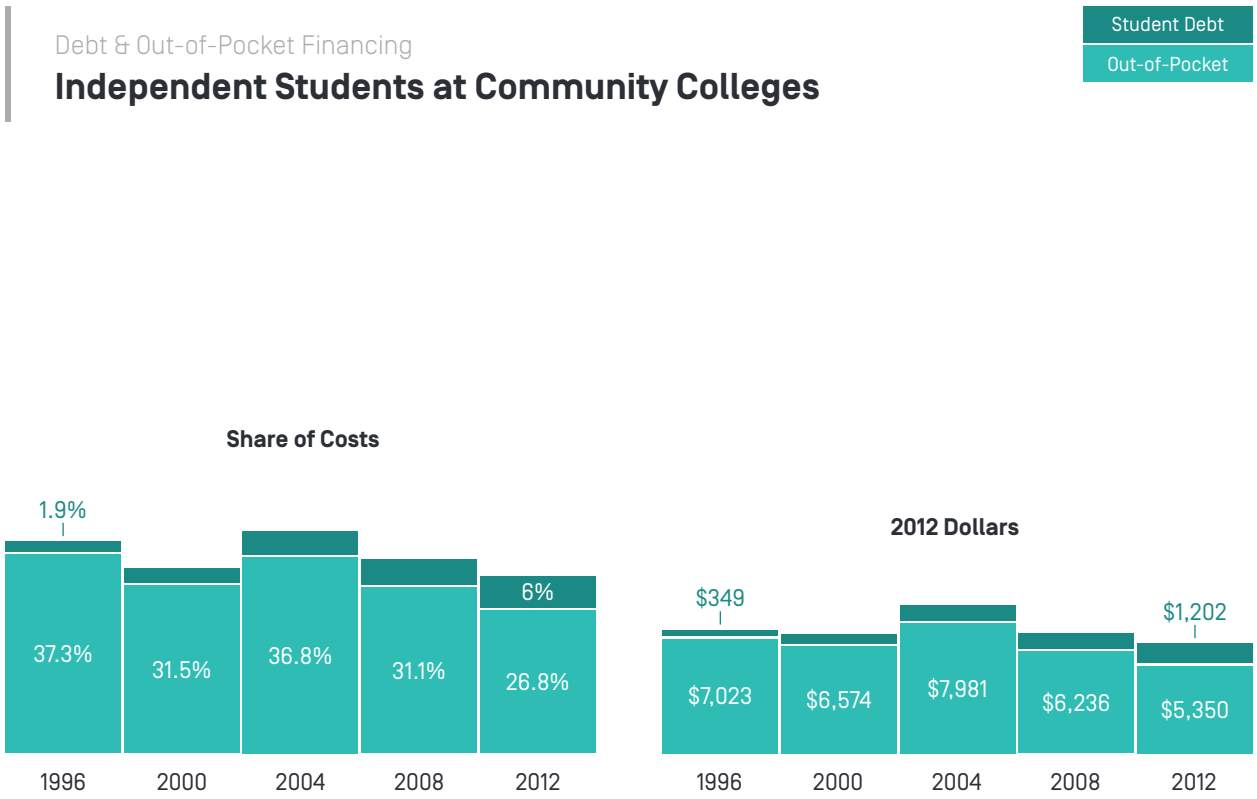
Debt & Out-of-Pocket Financing

Dependent Students with Family Incomes of $30,000 or Less at Community Colleges



Debt & Out-of-Pocket Financing

Independent Students at Community Colleges



Notes

[1] *Private and Public Contributions to Financing College Education* (Washington, DC: Congressional Budget Office, January 2004), https://www.cbo.gov/sites/default/files/108th-congress-2003-2004/reports/01-23-education.pdf. The NPSAS uses a large, nationally-representative sample of institutions and students and is administered by the National Center for Education Statistics. NPSAS data come from multiple sources, including institutional records, government databases, and student interviews. Detailed data on participation in student financial aid programs are extracted from institutional records. Data about family circumstances, demographics, education and work experiences, and student expectations are collected from students. See https://nces.ed.gov/surveys/npsas/index.asp.

[2] Congressional Budget Office, "Fair-Value Accounting for Federal Credit Programs," Issue Brief, March 2012, https://www.cbo.gov/publication/43027.

[3] According to the NPSAS 2012 data, 67 percent of students at public four-year colleges attend full time; 74 percent of students at private four-year colleges attend full time; and 32 percent of students at community colleges attend full time.

[4] The Delta Cost Project (http://www.deltacostproject.org/) housed at the American Institutes of Research, is a research and data initiative aimed at providing information to policymakers about how colleges spend money. Reporting practices for the Integrated Postsecondary Data System finance variables have fueled recent challenges to the accuracy of Delta Cost Project data. In some cases, financial measures for an entire higher education system with multiple campuses and branches were inaccurately assigned to individual colleges within that system. However, since we look at aggregate figures, and because such a small share of institutions was affected by those issues, it is unlikely that these reporting methods would have affected our estimates of the costs of education.

[5] The NPSAS datasets cover an academic year, but we refer to the last calendar year of the academic year for simplicity throughout this paper. For example, our study begins with the 1995–96 academic year and ends with the 2011–12 academic year.

[6] In the section at the beginning of this paper on limitations we discuss why we average the statistics over the time period we analyzed. Often there is not a clear trend in the results, and reporting the average across the entire time period helps to provide the best long-term benchmark for results in the most recent year in our study.

[7] A subsequent law lowered the rates significantly starting in the 2013–14 academic year, but our study ends with the 2011–12 year due to data availability. See H.R. 1911, The Bipartisan Student Loan Certainty Act of 2013, 113th Congress, Public Law No: 113-28. Prior to that law, however, lawmakers did reduce the interest rates on Subsidized Stafford loans to 3.4 percent in the 2011–12 academic year and we take that into account in our estimates. Therefore, while the subsidy rate was lower on Unsubsidized Stafford loans in 2012, it was not lower on Subsidized Stafford loans compared with the other years in our analysis. Information on those estimates is included in a methodology discussion at the end of this paper.

[8] The College Cost Reduction and Access Act of 2007, Public Law No: 110-84; The Higher Education Opportunity Act of 2008, Public Law 110-315; The Health Care and Education Reconciliation Act of 2010, Public Law 111-152.

[9] Federal student loans for undergraduates are subject to annual and lifetime borrowing limits. The annual limits range from $5,500 to $12,500. Lifetime limits range from $31,000 to $57,500. See https://studentaid.ed.gov/sa/types/loans/subsidized-unsubsidized.

[10] That is an annual percentage rate (APR), which is based on a fixed interest rate of 7.9 percent that the government charged on the loan, a 4.0 percent origination fee, and a 10-year repayment term.

[11] Note that under our methodology, these are not the actual amounts borrowed; rather, they reflect only the unsubsidized portion of the loan. In the case of Parent PLUS loans in 2012, we assign the full amount borrowed to the family's share of costs, as the loans are unsubsidized, plus 19 percent more to reflect the federal government's earnings on the loan. The actual amount borrowed in PLUS loans in this case was $3,325.

[12] Prior to the enactment of the American Opportunity Tax Credit in 2009, eligibility for the two largest tuition tax benefits, the Lifetime Learning Credit and the Hope Credit, phased out between $96,000 and $116,000 for families filing joint tax returns. A less generous benefit,

the tuition and fees deduction, worth up to about $1,000 in reduced tax liability, had a higher income cutoff. In contrast, eligibility for the $2,500 American Opportunity Tax Credit phased out between $160,000 and $180,000 in 2012. Thus, higher-income families became eligible for larger tax benefits.

[13] We do not break out or differentiate between need-based and merit-based institutional grant aid. According to 2012 NPSAS data, about 64 percent of institutional grant aid ($798) for dependent students at public four-year colleges includes merit or non-need based criteria. However, low-income students receive this aid as well. Students in our lowest income group receive $683 on average in such aid; students in the second-lowest income group received $741, which is close to the average for all dependent students. Students in the highest income group received $919, or about 78 percent of the average institutional grant at public four-year colleges.

[14] Jason Delisle and Kim Dancy, *A New Look at Tuition Tax Benefits: National Survey Data Reveal the Surprising and Not-So-Surprising Effects of Policy Changes* (Washington, DC: New America, November 2015), https://static.newamerica.org/attachments/10416-a-new-look-at-tuition-tax-benefits/TaxCredits11.2.277d3f7daa014d5a8632090f97641cee.pdf.

[15] For student loans, the amount borrowed under our analysis is always slightly less than the actual amount borrowed. For Parent PLUS loans, the amount we show is generally close to the full share of the loan, except in 2012, when it is 119 percent of the amount borrowed. The methodology section of the paper explains this accounting in more detail.

[16] Michael Greenstone and Adam Looney, "Rising Student Debt Burdens: Factors Behind the Phenomenon," *Brookings on Job Numbers* (blog), Brookings Institution, July 5, 2013, http://www.brookings.edu/blogs/jobs/posts/2013/07/05-student-loans-debt-burdens-jobs-greenstone-looney.

[17] The Ensuring Continued Access to Student Loans Act, Public Law 110-350.

[18] In this instance we use the actual figures reported in NPSAS for full-time students. These figures do not reflect amounts adjusted for the subsidy students receive on the loans like the other figures in our analysis and this report.

[19] The Ensuring Continued Access to Student Loans Act, Public Law 110-350.

[20] Most of this trend is due to parents borrowing more, but some is also due to the fact that Parent PLUS loans were a relatively less expensive option for parents in 2008 when market interest rates were higher. They became significantly less so by 2012. Under our methodology, we assign a higher cost to parents for PLUS loans taken out in 2012 than in 2008.

[21] *Private and Public Contributions to Financing College Education* (Washington, DC: Congressional Budget Office, January 2004), https://www.cbo.gov/sites/default/files/108th-congress-2003-2004/reports/01-23-education.pdf.

[22] Deborah Lucas and Damien Moore, *Guaranteed Versus Direct Lending: The Case of Student Loans*, Working Paper (Washington, DC: Congressional Budget Office, June 2007), https://www.cbo.gov/sites/default/files/110th-congress-2007-2008/workingpaper/2007_09_studentloans_0.pdf.

[23] Congressional Budget Office, "Fair-Value Accounting for Federal Credit Programs," Issue Brief, March 2012, https://www.cbo.gov/publication/43027.

[24] Jason Delisle and Kim Dancy, *A New Look at Tuition Tax Benefits: National Survey Data Reveal the Surprising and Not-So-Surprising Effects of Policy Changes* (Washington, DC: New America, November 2015), https://static.newamerica.org/attachments/10416-a-new-look-at-tuition-tax-benefits/TaxCredits11.2.277d3f7daa014d5a8632090f97641cee.pdf.

[25] Jason Delisle and Kim Dancy, "Comparing New America's and College Board's Tax Benefit Figures," *EdCentral* (blog), New America, November 5, 2015, http://www.edcentral.org/college-boards-tax-benefit-figures/.

[26] *Higher Education: A Small Percentage of Families Save in 529 Plans* (Washington, DC: U.S. Government Accountability Office, December 2012), http://www.gao.gov/assets/660/650759.pdf; College Savings Plans Network, "529 Plan Data," http://www.collegesavings.org/529-plan-data/.

[27] *Higher Education: A Small Percentage of Families Save in 529 Plans* (Washington, DC: U.S. Government Accountability Office, December 2012).