

Post-Secondary Education Choices of the Minnesota High School Class of 1999

# The 1999 Minnesota High School Follow-up Survey



MINNESOTA DEPARTMENT OF

*Children,  
Families &  
Learning*

*The 1999 Minnesota High School Follow-Up Survey*

**Post-Secondary Education Choices of the  
Minnesota High School Class of 1999**



MINNESOTA DEPARTMENT OF

*Children,  
Families &  
Learning*

November 2001

**The 1999 Minnesota High School Follow-Up Survey  
Post-Secondary Education Choices of the Minnesota High School Class of 1999**

Minnesota Higher Education Services Office  
1450 Energy Park Drive, Suite 350  
Saint Paul, MN 55108-5227

Telephone 651 642-0533  
800 657-3866

FAX 651 642-0675  
E-Mail [info@heso.state.mn.us/](mailto:info@heso.state.mn.us/)  
Web [www.mheso.state.mn.us](http://www.mheso.state.mn.us)

For the Hearing Impaired:  
TTY Relay 800 627-3529

---

Minnesota Department of Children, Families & Learning  
1500 Highway 36 West  
Roseville, Minnesota 55113-4266

Telephone 651 582-8200

FAX 651 582-8202  
E-mail [children@state.mn.us](mailto:children@state.mn.us)  
Web [children.state.mn.us](http://children.state.mn.us)

This document can be made available in an  
alternate format by calling 651 642-0533.

© Minnesota Higher Education Services Office, 2001

This information may be reproduced. Please reference appropriately.

# Table of Contents

<b>Table of Contents</b> .....	<i>iii</i>
<b>Executive Summary</b> .....	<i>v</i>
<b>Introduction</b> .....	1
A Look at Post-Secondary Education Choices of 1999 High School Graduates .....	1
Sources of Data .....	2
Structure of Report .....	3
<b>Part I:</b>	
<b>How many Minnesota high school seniors enrolled in post-secondary education at a Minnesota or reciprocity institution the fall following graduation?</b> .....	4
Family Income .....	4
Parents' Education .....	5
Fall Work Plans .....	6
Gender and Race/Ethnicity .....	6
Saving for Education and Other Activities After High School .....	7
<b>Part II:</b>	
<b>Did students carry out the plans for post-secondary education that they reported during spring 1999?</b> .....	9
Planned and Actual Enrollment by Family and Personal Characteristics .....	10
Family Income .....	10
Parents' Education .....	11
Fall Work Plans .....	12
Gender and Race/Ethnicity .....	12
Saving for Education and Other Activities After High School .....	12
Planned and Actual Enrollment by Type of Institution .....	12
The Importance of Planning .....	14
<b>Part III:</b>	
<b>How was family income related to the post-secondary choices of Minnesota students?</b> .....	15
Percent Enrolling by Family Income .....	15
Race/Ethnicity and Family Income .....	16
Student Institutional Choices by Family Income .....	17
Two-Year and Four-Year Institutions .....	17
Enrollment by Institution Type and Family Income .....	18
Cumulative Distributions of Family Income by Type of Institution .....	19
Median Family Income by Type of Institution .....	21
Post-Secondary Decisions as Related to Family Income .....	22

**Part IV:**  
**What family and school experiences appear to lead to higher participation by students from low-income families?** ..... 23  
    Critical Skills/Competency Areas ..... 23  
    Parent/Teacher Involvement ..... 24  
    Implications ..... 25

**Conclusion** ..... 27

**Appendix:**  
**Logistic Regression Methodology** ..... 28

**Endnotes** ..... 31

## Executive Summary

This report examines the transition from high school senior to college freshman for Minnesota students. Their decisions about enrollment in post-secondary education can be used to measure how well Minnesota is providing access to and choice of educational opportunities for students from different family backgrounds and school experiences.

The report addresses four questions:

1. How many 1999 Minnesota high school seniors enrolled in post-secondary education at a Minnesota or reciprocity institution the fall following graduation?
2. Did students carry out the plans for post-secondary education that they reported during spring 1999?
3. How was family income related to the post-secondary choices of Minnesota students?
4. What family and school experiences appear to lead to higher participation by students from low-income families?

The post-secondary education choices of a representative sample of 1999 Minnesota high school graduates are explored in this report. Student and parent survey data from the 1999 Minnesota High School Follow-Up Survey, administered by the Minnesota Department of Children, Families & Learning (CFL), were matched with student enrollment data bases maintained by the Minnesota Higher Education Services Office (MHESO). Findings identify the fall 1999 post-secondary participation rates of 1999 Minnesota high school graduates in Minnesota public and private institutions, and public institutions in North Dakota, South Dakota, Wisconsin, Manitoba or Iowa under tuition reciprocity benefits.

### **Greater Than Fifty Percent Enroll Immediately**

An estimated 60 percent of 1999 Minnesota high school seniors enrolled in post-secondary education the fall following graduation. Fifty-two percent of the representative sample enrolled in a Minnesota or reciprocity institution the fall following graduation. Evidence indicates that close to an additional 8 percent students enrolled in an out-of-state, non-reciprocity institution. These percentages do not include students who may have first enrolled in post-secondary education at a time other than the fall.

There were large differences in the percent who attended a Minnesota or reciprocity institution by income, race and parental education. Fifty-three percent of white students enrolled, compared to 36 percent of students of color. If neither parent had a post-secondary degree of any kind, 45 percent of students enrolled. When one or both parents had a post-secondary degree, 57 percent enrolled.

## **Planning Makes a Difference**

“Planners,” defined as students with stated plans to enroll the fall following graduation, were far more likely to enroll in a Minnesota or reciprocity institution the fall following graduation than non-planners. Of the 82 percent of students who were planners, 61 percent enrolled. Eighteen percent of high school graduates were non-planners. Only 9 percent of non-planners enrolled. The percentage of students who planned to enroll varied by income and race, as did the percentage of planners who actually enrolled the following fall.

## **Family Income Makes a Difference**

Despite the availability of need-based financial aid, family income is strongly related to student decisions to continue education past high school. As family income increased, so did the percentage of students who enrolled immediately. Thirty-seven percent of students from families who earned less than \$25,000 enrolled in a Minnesota or reciprocity institution, while over 60 percent of students from families who earned over \$90,000 attended.

Students from low, middle and high income families attended all types of institutions. Differences in median family incomes of students at different institutions, however, indicate that economic status also affected student choice.

- Median family income was lowest, \$30,000 – \$40,000, for new-entering Minnesota high school graduates who attended technical colleges and consolidated community and technical colleges.
- Students who attended Minnesota state universities and private four-year institutions were from families with a median income of \$40,000 – \$50,000.
- The median family income of students who attended community colleges, private career institutions, and the University of Minnesota was \$50,000 – \$60,000.
- Finally, the highest median family income, \$60,000 – \$70,000, was for new-entering high school graduates who enrolled in reciprocity four-year institutions.

The largest number of students from families who earned less than \$90,000 enrolled in a Minnesota state college (includes community colleges, technical colleges and consolidated community and technical colleges). Students from families who earned \$90,000 – \$150,000 attended the University of Minnesota more than any other institution type. The institution type with the greatest enrollment of students from families who earned more than \$150,000 were Minnesota private four-year institutions. The institution type with the second largest enrollment of students from families who earned less than \$60,000 was a Minnesota private four-year institution, the University of Minnesota for families who earned \$60,000 – \$90,000, and reciprocity institutions for students from families who earned more than \$90,000.

The participation gap between students of color and white students attending a Minnesota or reciprocity institution immediately following high school graduation decreased as income increased. Among students from families who earned less than \$40,000, the participation rate of students of color was 26 percent compared to 46 percent of white graduates. The difference between the percentage of students of color and white students attending decreased to 3 percent among students from families who earned more than \$80,000; 56 percent of students of color and 59 percent of white students enrolled.

### **Students from Low-income Families: Family and School Experiences Make a Difference**

The final part of the analysis focused on family and school experiences that appear to lead to higher participation by students from families who earned less than \$25,000. Self-reported mastery in any of six critical skill/competency areas was associated with increased odds of immediate enrollment in a Minnesota or reciprocity post-secondary institution:

- Communicating in a language other than English (+285 percent increase in odds of enrolling)
- Understanding and applying scientific knowledge and methods (+148 percent increase in odds of enrolling)
- Use of research to solve problems (+120 percent increase in odds of enrolling)
- Reading and interpreting written information (+69 percent increase in odds of enrolling)
- Using math to solve problems (+45 percent increase in odds of enrolling)
- Writing for a variety of purposes (+34 percent increase in odds of enrolling)

Similar positive relationships were found between parent/teacher involvement and post-secondary attendance. Access to teachers (+37 percent increase in odds of enrolling), parental involvement in making post-high school plans (+28 percent increase in odds of enrolling), and teachers' ability to stimulate thinking (+27 percent increase in odds of enrolling) were associated with increased student post-secondary participation the fall following graduation.





## Introduction

The transition from high school senior to college freshman is an important step in the lives of most Minnesota high school graduates. For individuals, choices about post-secondary education can influence their life opportunities. Collectively, individual post-secondary decisions affect the Minnesota and national workforce and economic vitality.

In today's economy, workers without a post-secondary degree earn substantially less than college graduates. According to 1999 U.S. Census Bureau data, individuals aged 25 – 34 who had earned a bachelor's degree or higher earned 68 percent more than their peers with only a high school diploma.<sup>1</sup> Similarly, 25 – 34 year-old earners of a two-year degree earned 24 percent more than high school graduates.

While decisions about education after high school are made by individual students and families, providing access to post-secondary education is an important public policy goal in Minnesota. Enabling students to choose among post-secondary educational options provides them with opportunities to pursue education best suited to their talents and interests. Persistent concerns exist, however, that family income constrains post-secondary educational choices. Decisions about what courses to take in high school and experiences with parents and teachers also influence post-secondary educational decisions.

### **A Look at Post-Secondary Education Choices of 1999 High School Graduates**

With information from a redesigned High School-Follow Up Survey by the Minnesota Department of Children, Families & Learning, it is possible to learn more about the choices of students in Minnesota. This report considers the following questions about the post-secondary choices that new Minnesota high school graduates from different backgrounds and experiences made in fall 1999:

1. How many Minnesota high school seniors enrolled in post-secondary education at a Minnesota or reciprocity institution the fall following graduation?
2. Did students carry out the plans for post-secondary education that they reported during spring 1999?
3. How was family income related to the post-secondary choices of Minnesota students?
4. What family and school experiences appear to lead to higher participation by students from low-income families?

## Sources of Data

This report is based on data drawn from the 1999 Minnesota High School Follow-Up Survey, administered by the Minnesota Department of Children, Families & Learning (CFL) and enrollment data bases maintained by the Minnesota Higher Education Services Office (HESO).

The Minnesota Department of Children, Families & Learning has been administering a High School Follow-Up Survey to Minnesota graduating high school seniors since 1972. In 1996, the High School Follow-Up Survey was redesigned. CFL surveys are given to a sample of parents and students who supply information on family economic status and family structure, aspirations, parental involvement, saving for post-high school plans, and perceptions of the high school experience. CFL has released statistical digests of information on the classes of 1997 through 1999, a trend report, and a three-year follow up report on the class of 1997.<sup>2</sup>

The 1999 CFL survey sample size is 1,992. The sample is weighted to reflect the population of 1999 Minnesota graduating high school seniors, of which there were just over 57,000.

During the past two years, CFL and MHESO have addressed data privacy issues to allow data from CFL's Minnesota High School Follow-Up Survey to be merged with two Higher Education Services Office data bases on enrollments in post-secondary education:

- The Student Enrollment Record Data Base contains unit records of post-secondary students enrolled in nearly all public and private Minnesota institutions.
- A second data base identifies Minnesota students who attend a public post-secondary institution in a neighboring state or province under a tuition reciprocity agreement. Minnesota has statewide tuition reciprocity agreements with North Dakota, South Dakota, Wisconsin, and Manitoba. A limited agreement exists between Minnesota and Iowa.

The 1999 High School Follow-Up Survey was merged with the fall 1999 Student Enrollment Record Data Base and information on students attending out-of-state institutions covered by tuition reciprocity agreements. The merged file represents the population of 1999 Minnesota high school graduates who attended Minnesota public or private post-secondary institutions and public institutions in North Dakota, South Dakota, Wisconsin, Manitoba or Iowa under tuition reciprocity benefits.

## Structure of Report

The report is divided into four parts, as outlined by the questions above:

- Part I is a description of participation rates in a Minnesota or reciprocity post-secondary institution by student and family background.
- Part II compares students' stated post-secondary plans and their subsequent enrollment decisions.
- Part III is a closer examination of post-secondary enrollment decisions and family income.
- Part IV focuses on students from families with incomes of \$25,000 or less. Relationships between academic skills, parental/teacher involvement, and immediate post-secondary enrollment after high school are examined through multivariate analysis. These variables are examined because they can be influenced by individuals and public policy.

## Part I:

### How many Minnesota high school seniors enrolled in post-secondary education at a Minnesota or reciprocity institution the fall following graduation?

Approximately 52 percent of the Minnesota class of 1999 enrolled in a Minnesota or reciprocity<sup>3</sup> institution the fall following graduation. According to data from the National Center for Education Statistics, an additional 6 to 10 percent of Minnesota high school seniors attended out of state, non-reciprocity institutions.<sup>4</sup> Since there is no way of tracking these students with the available data, they are not included in the results presented here. However, survey evidence discussed in part II indicates the overall participation rate in Minnesota is close to 60 percent. Nationally, 65 percent of high school students enroll in a post-secondary institution the fall following graduation.<sup>5</sup>

Minnesota High School Class of 1999: Percent Enrolling in a Minnesota/Reciprocity Institution, Fall 1999		
	Percent Enrolled	Percent Enrolled
<b>All Students</b>	<b>51.6</b>	
<b>Family Income</b>		
< \$25,000	36.8	
\$25,000 – \$39,999	45.8	
\$40,000 – \$59,999	55.2	
\$60,000 – \$89,999	54.7	
\$90,000 – \$149,999	62.0	
\$150,000+	60.3	
<b>Parents' Education</b>		
Neither attended college	44.8	
One or both attended some college	46.1	
One or both have 2 or 4-yr degree	57.2	
		<b>Fall Work Plans</b>
		Full-time (35+ hrs/wk)
		Part-time
		Did not plan to work
		Regular military service
		Military reserves or ROTC
		<b>Demographic Characteristics</b>
		Female
		Male
		Students of color
		White students
		<b>Saving for Child's Plans After High School</b>
		Parents saved
		Parents did not save

*Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases*

## Family Income

Parents of graduating Minnesota high school seniors were asked to report their family income on the Parent/Guardian Survey. Consistent with national data,<sup>6</sup> the percentage of students choosing to enroll in a post-secondary institution the fall following graduation increases as family income

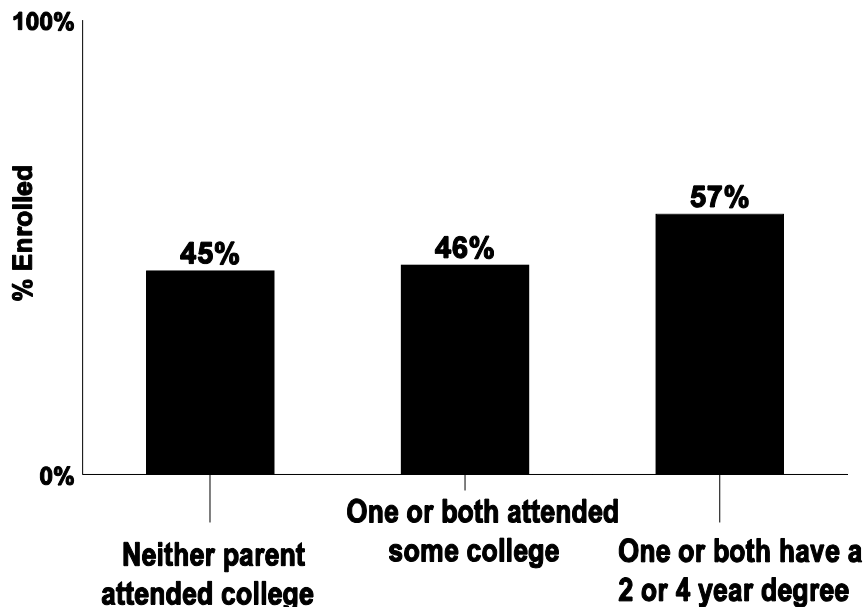
increases. Thirty-seven percent of students from families earning less than \$25,000 per year enrolled in a Minnesota or reciprocity institution the following fall. The percentage enrolled increased steadily from 40 to 60 percent for students from families who earned between \$25,000 and \$90,000. Over 60 percent of students from families earning \$90,000 or more enrolled. The relationships between family income and the immediate post-secondary enrollment of high school seniors will be discussed in greater detail in part III.

## Parents' Education

Parents were also asked to report the educational attainment of each parent. Nationally, the percentage of high school seniors enrolling in post-secondary education the fall following graduation is positively related to parents' education.<sup>7</sup>

This relationship is true for Minnesota students as well. If neither parent attended college, 45 percent of students enrolled in a Minnesota or reciprocity institution the following fall. If one or both parents earned a two or four-year degree, the percentage enrolling was 57 percent.

**Class of 1999: Percent Enrolled in a Minnesota or Reciprocity Institution by Parents' Education, Fall 1999**



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

## Fall Work Plans

The Student Survey included questions about the fall work plans of students. Students were asked if they intended to work full-time, part-time or not at all. In addition, students were also questioned about whether they planned to join the military or ROTC.

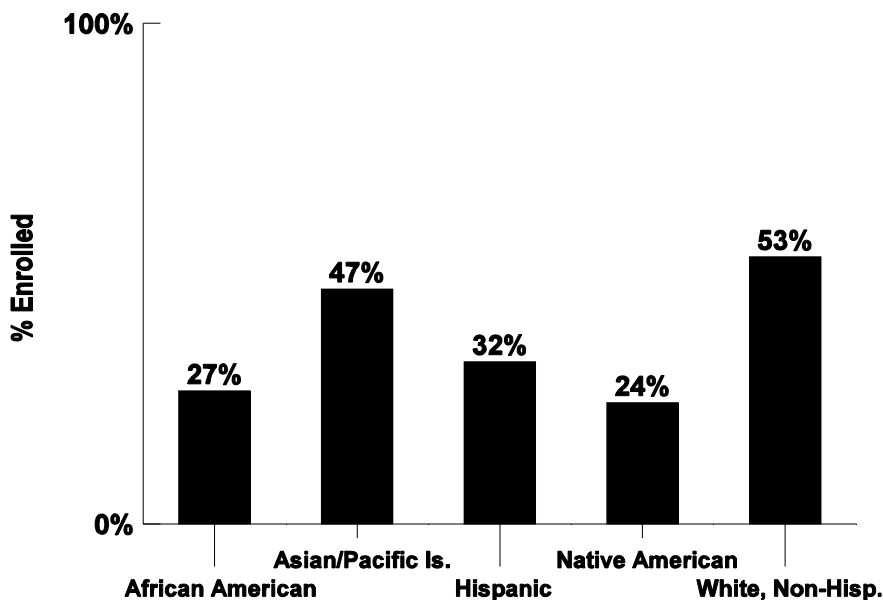
Nineteen percent of students who planned on working full-time in the fall enrolled in a Minnesota or reciprocity institution the fall following high school graduation. Sixty-three percent of students not planning on working enrolled. Ten percent of students planning on joining regular military service chose to enroll, while 21 percent of students planning on joining ROTC did so.

## Gender and Race/Ethnicity

For most years since 1982, females have participated in post-secondary education immediately upon high school completion at greater rates than males.<sup>8</sup> Fifty-five percent of female high school graduates in Minnesota participated immediately in post-secondary education at a Minnesota or reciprocity institution. Forty-nine percent of males participated.

Students of color have historically participated in post-secondary education at a lower rate than white students in Minnesota.<sup>9</sup> In fall 1999, 36 percent of high school graduates of color enrolled in a Minnesota or reciprocity institution. Fifty-three percent of white students enrolled. Except

**Class of 1999: Percent Enrolled in a Minnesota or Reciprocity Institution by Race/Ethnicity, Fall 1999**



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

for white students, Asian/Pacific Islanders enrolled more than any other racial/ethnic group (47 percent). Twenty-four percent of Native American high school graduates participated in post-secondary education at a Minnesota or reciprocity institution, the smallest percentage.

### **Saving for Education and Other Activities After High School**

Parents were asked if they saved money in order to help their children financially with their plans for after high school. Saving money for college is a tangible way for families to help make post-secondary education an option for their children. Saving money also sends a signal to children about the significance of post-secondary education.

The 1999 Minnesota High School Follow-Up Survey Statewide Overview indicated the percentage of parents saving for their children’s post-secondary plans increased dramatically with income.<sup>10</sup>

Many 1999 Minnesota high school graduates whose parents saved did not immediately enroll in post-secondary education. However, graduates were more likely to enroll at a post-secondary institution across most income levels when their parents had saved to help them finance their plans after high school.

**Class of 1999: Percent of Parents Saving Money to Help Child Financially with Post-Secondary Plans**

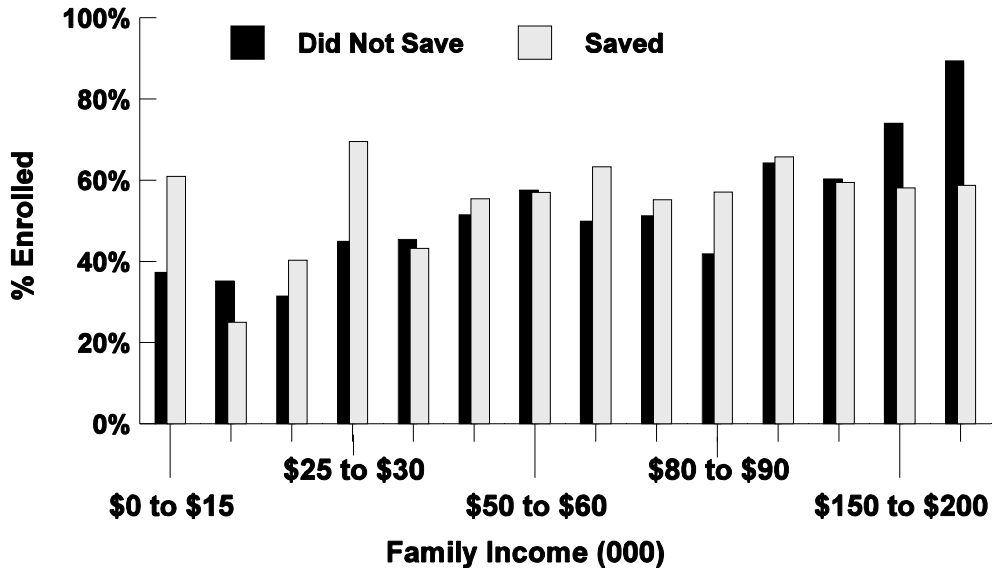


*Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey*



Fifty-six percent of students with parents who saved money for their children’s post-secondary plans immediately attended a Minnesota or reciprocity institution after high school graduation. Forty-eight percent of students with parents who did not save attended.

**Class of 1999: Percent of Students Enrolled in Post-secondary Education by Family Income and Family Post-secondary Savings Behavior, Fall 1999**



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

## Part II:

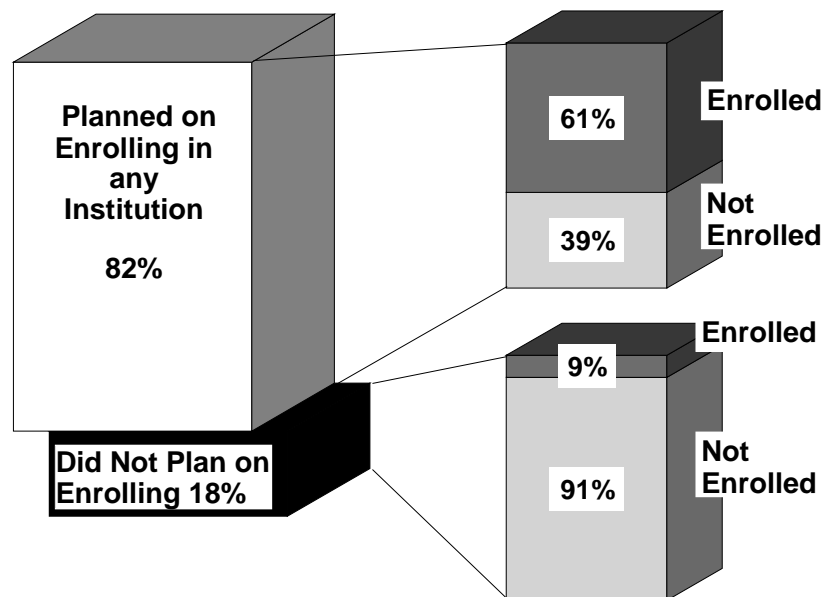
### Did students carry out the plans for post-secondary education that they reported during spring 1999?

Virtually all 1999 Minnesota high school graduates who attended a Minnesota or reciprocity institution the fall following graduation had planned to do so in spring 1999. Over a third of the students who planned to enroll, however, did not attend one of these institutions, although it is possible they enrolled later than fall 1999.

When asked about their plans for college, 82 percent of students surveyed in spring 1999 planned on attending a post-secondary institution the following fall. The high percentage of students who planned to enroll in post-secondary education reflects the perceived importance of continued education past high school. The message to high school students is getting through: without post-secondary education, it is difficult to compete in today's job market.

While the message may be understood, 39 percent of "planners" did not enroll immediately. Identifying discrepancies between plans to enroll and actual enrollment of different types of students may highlight post-secondary access problems. This section focuses on the percentage of planners enrolling in a Minnesota or reciprocity institution, differences between different types of students, and on planned and actual enrollment by type of institution.

**Class of 1999: Percent Distribution by Fall Post-Secondary Enrollment Plans & Enrollment in a Minnesota/Reciprocity Institution**



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

## **Planned and Actual Enrollment by Family and Personal Characteristics**

To assess differences between students' plans and outcomes, the percentage of respondents enrolled in fall 1999 by enrollment plans was calculated for students with different family and personal characteristics. The connection between plans and actual behavior varies considerably according to these attributes.

Students not planning on enrolling consistently enrolled at a rate 40 to 50 percentage points lower than students who planned on enrolling. The relationship between immediate post-secondary plans and enrollment existed across family income, parental saving, fall work plans, parents' education, sex and race.

Eighteen percent of 1999 Minnesota high school graduates responded that their plans for college did not include enrolling the fall following graduation. Nine percent of these "non-planners" attended a Minnesota or reciprocity institution the fall following graduation, only .5 percent of all 1999 high school graduates.

### **Family Income**

Across income, students were more likely to be planners as family income increased. Sixty-six percent of students from families earning less than \$25,000 and 81 percent of students from families earning \$25,000 – \$39,999 thought they would be enrolled in college the fall after high school graduation. Students from families with household incomes less than \$40,000 were the least likely to realize their college plans from the previous spring. About 55 percent of planners from families earning less than \$40,000 enrolled, below the average of 61 percent.

Compared to families earning less than \$40,000, a large percentage of students from families with incomes greater than \$40,000 responded with plans to attend. Over 80 percent of students in each income group over \$40,000, with 97 percent of the students from families earning over \$150,000, indicated plans to continue their education in the fall. A much greater percentage (60 – 67 percent) of planners adhered to their aspirations and enrolled in a post-secondary institution the fall following graduation, than did planners from families earning less than \$40,000 (54 – 55 percent).

As family income decreased, there were proportionally fewer planners, fewer of the planners enrolled in post-secondary education, and fewer students enrolled regardless of plans. Many students continue to face financially difficult and complicated decisions about enrolling in post-secondary education. The relationship between post-secondary enrollment decisions and income will be examined further in part III.

<b>Class of 1999: Post-Secondary Enrollment in a Minnesota/Reciprocity Institution by Fall Plans</b>						
	Planned to Enroll in Fall 1999			Did Not Plan to Enroll		
	Percent Planning to Enroll in Any Institution	Percent Actually Enrolled Fall 1999	Percent Not Enrolled	Percent Not Planning to Enroll	Percent Actually Enrolled Fall 1999	Percent Not Enrolled
<b>All Students</b>	<b>82.5</b>	<b>60.7</b>	<b>39.3</b>	<b>17.5</b>	<b>9.1</b>	<b>90.9</b>
<b>Family Income</b>						
< \$25,000	66.4	54.1	45.9	33.6	2.6	97.4
\$25,000 – \$39,999	81.1	55.2	44.8	18.9	5.7	94.3
\$40,000 – \$59,999	81.9	64.9	35.1	18.1	11.2	88.8
\$60,000 – \$89,999	86.6	60.1	39.9	13.4	20.0	80.0
\$90,000 – \$149,999	91.0	67.3	32.7	9.0	8.8	91.2
\$150,000+	97.6	61.8	38.2	2.4	0.0	100.0
<b>Parents' Education</b>						
Neither attended college	69.8	62.4	37.6	30.2	4.1	95.9
One or both attended some college	77.7	57.8	42.2	22.3	5.2	94.8
One or both have 2 or 4-yr degree	89.1	61.9	38.1	10.9	18.6	81.4
<b>Fall Work Plans</b>						
Full-time (35+ hrs/wk)	34.6	45.6	54.4	65.4	4.7	95.3
Part-time	92.3	60.0	40.0	7.7	19.0	81.0
Did not plan to work	95.6	65.0	35.0	4.4	20.1	79.9
Regular military service	30.1	33.3	66.7	69.9	0.0	100.0
Military reserves or ROTC	46.3	41.4	58.6	53.7	3.4	96.6
<b>Demographic Characteristics</b>						
Female	87.8	60.9	39.1	12.2	8.4	91.6
Male	77.1	60.3	39.7	22.9	9.5	90.5
Students of color	77.3	45.0	55.0	22.7	3.2	96.8
White students	83.0	62.2	37.8	17.0	9.9	90.1
<b>Saving for Child's Plans</b>						
Parents saved	86.9	60.4	39.6	13.1	18.2	81.8
Parents did not save	78.6	61.1	38.9	21.4	4.1	95.9

Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

### Parents' Education

The higher the educational attainment of their parents, the more likely students were to plan on attending a post-secondary institution after high school. Seventy percent of students from families where neither parent attended college were planners. Eighty-nine percent of students were planners when one or both parents had a college degree.

Among planners, students were least likely to enroll if one or both parents had attended post-secondary education but did not earn a degree, although the difference is minimal. Fifty-eight percent of these planners enrolled, whereas 62 percent of planners who had a parent with no post-secondary education or a college degree enrolled.

### **Fall Work Plans**

Students who planned to work full-time in the fall, enlist in the military, or join ROTC were less likely to plan on going to college compared to other groups. Furthermore, planners from these three groups attended Minnesota or reciprocity institutions at rates well below average. Family income may play a role if students from lower income families are more prone to join the military or work full-time. Sixty-five percent of planners not intending to work in the fall followed through and enrolled.

### **Gender and Race/Ethnicity**

Proportionately fewer male students and students of color planned on immediately attending a post-secondary institution. Among planners, the percent attending varied little by sex, but the difference between students of color and white students was striking. Only 45 percent of students of color who planned to be in college the fall following high school graduation actually enrolled in a Minnesota or reciprocity institution, while 62 percent of white planners went. Fewer students of color are planning to attend, and fewer of those planning to attend actually go.

### **Saving for Education and Other Activities After High School**

The relationship between post-secondary plans and enrollment was about the same for students from families who saved for their post high school plans and those from families who did not save.

### **Planned and Actual Enrollment by Type of Institution**

Overall, regardless of fall plans, 52 percent of 1999 Minnesota high school graduates were enrolled in a Minnesota or reciprocity institution in the fall of 1999. Students generally enrolled in the type of institution they planned on attending.

Forty-four percent of all students were enrolled in a Minnesota post-secondary institution the fall following high school graduation. About 11,600 students of the weighted sample of 57,071 indicated their plans were to enroll in an out-of-state institution. Of these 11,600, just over 4,000 enrolled in a Minnesota or reciprocity agreement institution. The remaining 7,000 students planning to enroll in an out-of-state institution represent about 12 percent of the total sample. These students could be enrolled at a post-secondary institution but they are not included in the enrollment totals presented here.

### Class of 1999: Planned and Actual Post-secondary Enrollment by Type of Institution

Reported Plans (spring 1999)	Actual Enrollment, Fall 1999							
	Minnesota 2-Year or < 2-Year Institution	Minnesota State University	University of Minnesota	Minnesota Private 4-Year Institution	Reciprocity 4-Year Institution	Reciprocity 2-Year Institution	No Match	Total
Minnesota Community College	49% 4,303	0% 0	0% 0	1% 98	0% 0	0% 0	50% 4,406	100% 8,807
Minnesota Technical College	48% 2,467	0% 0	0% 0	0% 0	0% 0	0% 0	52% 2,716	100% 5,183
Minnesota Four-Year Institution	5% 991	22% 4,747	27% 5,655	26% 5,504	0% 68	0% 0	20% 4,198	100% 21,163
Out of State Two-Year Institution	5% 38	0% 0	0% 0	0% 0	0% 0	4% 35	91% 774	100% 847
Out of State Four-Year Institution	1% 97	0% 0	0% 28	1% 121	40% 4,277	0% 0	58% 6,218	100% 10,741
Plan to Enroll– Institution Undecided	23% 77	7% 22	0% 0	7% 22	0% 0	0% 0	64% 216	100% 337
Do not Plan to Enroll Fall 1999	5% 501	1% 140	2% 160	1% 89	0% 20	0% 0	91% 9,083	100% 9,992
All Students	15% 8,475	9% 4,909	10% 5,843	10% 5,833	8% 4,365	0% 35	48% 27,611	100% 57,071

Weighted N = 57,071

Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

Students from families with incomes greater than \$90,000 were more likely to plan to attend an out-of-state institution than other students. National data also indicate that as family income increases, so does the average distance between institution of initial enrollment and home.<sup>11</sup> Since there is no way to track students who are attending out-of-state, non-reciprocity institutions in this dataset, evidence suggests that attendance is underestimated at higher family income levels.

<b>Class of 1999: Institution Location of Students Planning to Enroll by Family Income</b>		
	Planned on Attending Minnesota Institution	Planned on Attending Out-of-State Institution
Family Income	%	%
< \$25,000	84.6	15.4
\$25,000-\$39,999	78.5	21.5
\$40,000-\$59,999	82.3	17.7
\$60,000-\$89,999	74.3	25.7
\$90,000-\$149,999	64.8	35.2
\$150,000+	51.8	48.2
Total	76.3	23.7
<i>Source: Dept. of Children, Families &amp; Learning: 1999 Minnesota High School Follow-Up Survey</i>		

If all students who planned to enroll outside Minnesota actually did attend in fall 1999, the percentage of high school seniors immediately enrolling in a post-secondary institution would increase from 52 percent to 63 percent. It is reasonable to estimate that somewhere close to 60 percent of the class of 1999 enrolled in a post-secondary institution the fall following graduation.

### **The Importance of Planning**

Students are more likely to enroll in post-secondary education if they are “planners,” regardless of any other variable. Students planning on enrolling did so at a much greater rate than those who did not.

Groups that had the greatest discrepancy between post-secondary educational plans and enrollment were students from families with incomes less than \$40,000, students of color, students where at least one parent has some college but neither has a degree, and students who are planning on working full time or joining the military. Fewer students from these groups planned on enrolling the fall following graduation, and fewer of those who did plan on enrolling chose to attend compared to other groups.

It is possible that these students are not taking the necessary steps in preparing for post-secondary education as often as other students. While student choices differ, students who are most likely to enroll in post-secondary education the fall following high school graduation have specific planning experiences in common, regardless of family income, race or parents’ education. Individuals who choose to attend are more likely to have parents who were involved in the planning process.<sup>12</sup> They are also more likely to achieve “college qualifications” by enrolling in appropriate high school courses, taking an entrance exam, and applying to college. Finally, they must graduate from high school.<sup>13</sup> These five variables describe steps in planning for future enrollment in post-secondary education. Essential in any discussion of post-secondary access is the question of why these behaviors vary for students from different family backgrounds.

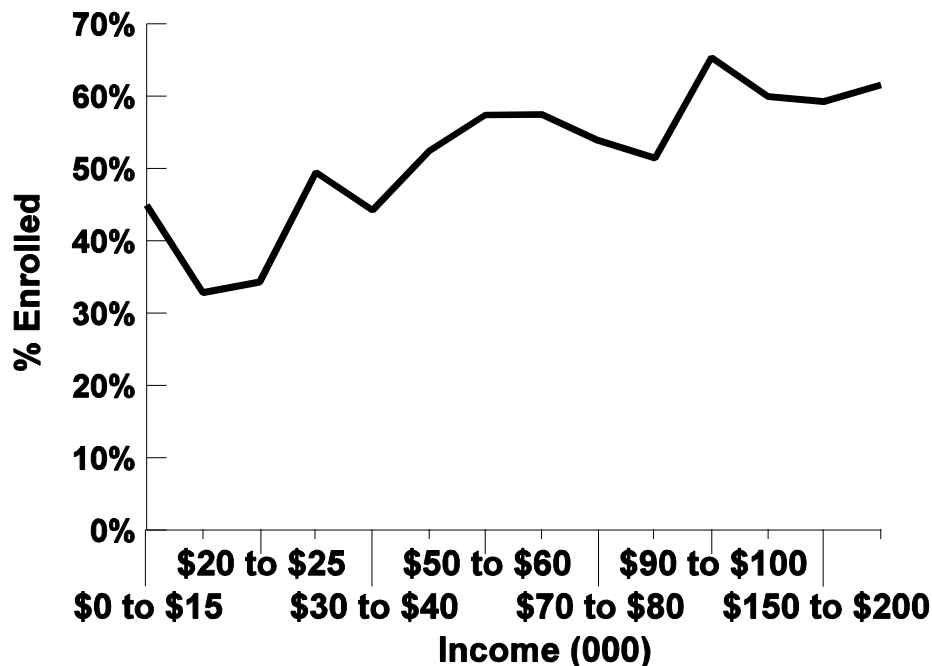
### Part III: How was family income related to the post-secondary choices of Minnesota students?

A common focal point in discussions about post-secondary choice is family income. The post-secondary choices students make differ significantly by family income. Not only is family income related to students' decisions to continue education past high school, but it is also related to the type of institutions they choose. Part III examines the relationship between family income and post-secondary choices among Minnesota high school seniors.

#### Percent Enrolling by Family Income

In general, as income increased, so did the percentage of students who enrolled in post-secondary education. This relationship has been shown to exist for many years in other studies.<sup>14</sup> The percentage of students who enrolled directly after high school in a Minnesota or reciprocity

Class of 1999: Percent of Students Enrolled in a Minnesota or Reciprocity Institution by Family Income, Fall 1999



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases



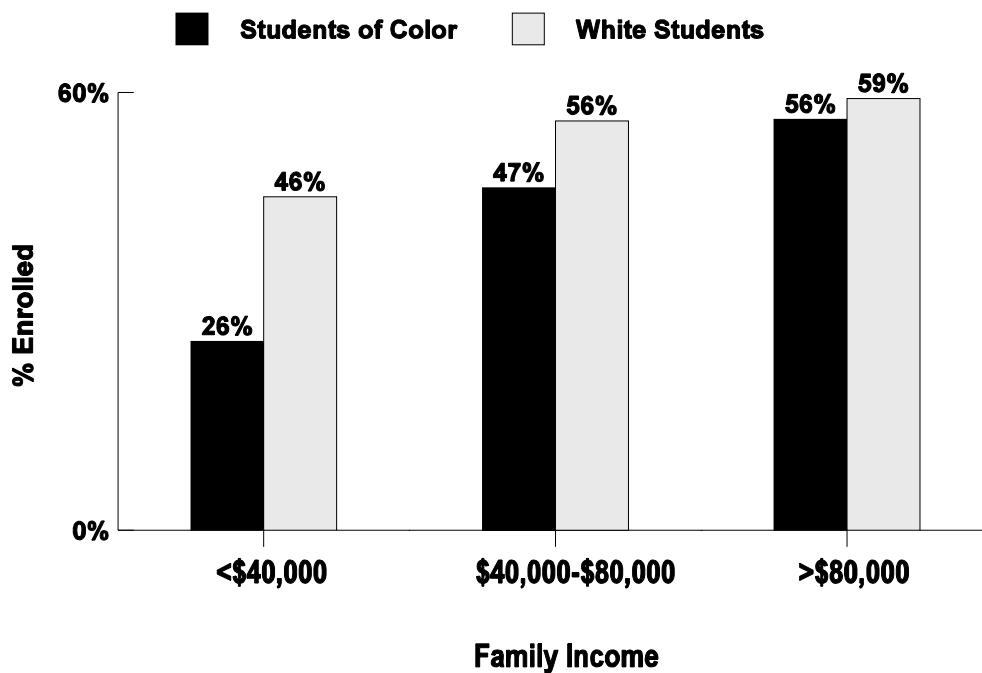
institution was less than 50 percent for students from families who earned less than \$40,000. Fifty to 60 percent of students from families who earned between \$40,000 and \$90,000 enrolled. The percentage of students enrolling was greater than 60 percent for students from families who earned more than \$90,000.

Money is not the only obstacle to post-secondary education, but higher family income can ease the financial transition and process of post-secondary attendance. Besides having more family income to pay for post-secondary education, students from higher income families often have other resources, such as parents who enrolled in post-secondary education. Enrollment is often expected and assumed, which can make the transition easier.

**Race/Ethnicity and Family Income**

For all income groups, white students enrolled in a Minnesota or reciprocity institution at greater rates than students of color, with only a minimal difference among students from families who earned more than \$80,000. Twenty-six percent of students of color from families who earned less than \$40,000 enrolled in a Minnesota or reciprocity institution, compared to 46 percent of white students from families who had similar incomes. The enrollment gap narrowed as income increased. Forty-seven percent of students of color from \$40,000 – \$80,000 families enrolled, compared to 56 percent of white students. Among families with incomes greater than \$80,000, 56 percent of students of color and 59 percent of the white students enrolled in a Minnesota or reciprocity institution.

**Class of 1999: Percent of Students Enrolled by Race/Ethnicity in a Minnesota or Reciprocity Institution by Family Income, Fall 1999**



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

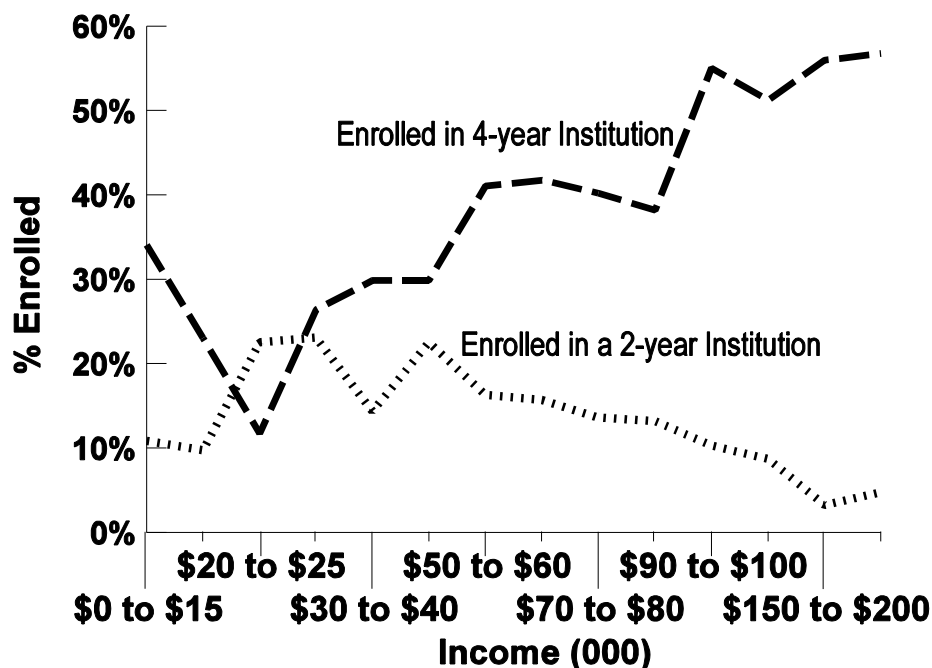
## Student Institutional Choices by Family Income

Over 50 percent of new-entering Minnesota high school graduates enrolled in a Minnesota or reciprocity institution in fall 1999 came from families with incomes between \$40,000 and \$89,999. Twelve percent came from families who earned less than \$25,000, and 3 percent came from families who earned more than \$150,000. While all institutions enroll students from all family incomes, income was related to the type of institution students attended.

### Two-Year and Four-Year Institutions

As income increased, so did the proportion of students who enrolled in four-year institutions. Approximately equal percentages of students from families earning less than \$30,000 attended two-year institutions and four-year institutions. For students from families earning more than \$30,000, the percentage who attended four-year institutions increased substantially, while the percentage who enrolled in two-year institutions declined steadily. The difference between the number of students who attended a four-year institution and a two-year institution was likely larger for students from families who earned more than \$90,000. More of these students were likely to attend an out-of-state, non-reciprocity institution, and therefore are not included in the dataset.

Class of 1999: Percent of Students Enrolled by Institution Type in a Minnesota or Reciprocity Institution by Family Income, Fall 1999



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

### Enrollment by Institution Type and Family Income

The largest number of students from families who earned less than \$90,000 enrolled in a Minnesota state college (includes community colleges, technical colleges and consolidated community and technical colleges). Students from families who earned \$90,000 – \$150,000 attended the University of Minnesota more than any other institution type. The institution type with the greatest enrollment of students from families who earned more than \$150,000 were Minnesota private four-year institutions.

The institution type with the second largest enrollment of students from families who earned less than \$60,000 was a Minnesota private four-year institution. The University of Minnesota had the second largest enrollment of students from families who earned \$60,000 – \$90,000. Finally, reciprocity institutions had the second largest enrollment of students from families who earned more than \$90,000.

Class of 1999: Percent Distribution of Enrolled Students by Institution Type and Family Income, Fall 1999*								
Family Income	% of Total %	Minnesota State Universities %	MN Private 4-year Institutions %	University of Minnesota %	Reciprocity 4-year Institutions %	Minnesota State Colleges %	MN Private Career Schools %	Total %
<\$25,000	11.6	17.4	21.3	15.8	5.2	37.5	2.9	100.0
\$25,000-\$39,999	17.5	17.8	18.5	17.0	10.1	36.0	0.7	100.0
\$40,000-\$59,999	27.0	17.7	22.6	14.8	10.3	32.4	2.2	100.0
\$60,000-\$89,999	24.9	16.3	15.4	21.5	20.5	24.5	1.8	100.0
\$90,000-\$149,999	15.5	15.3	18.6	29.3	21.7	12.8	2.3	100.0
\$150,000+	3.4	16.0	27.2	24.0	26.4	4.7	1.8	100.0
Total	100.0	----	---	---	---	---	---	---

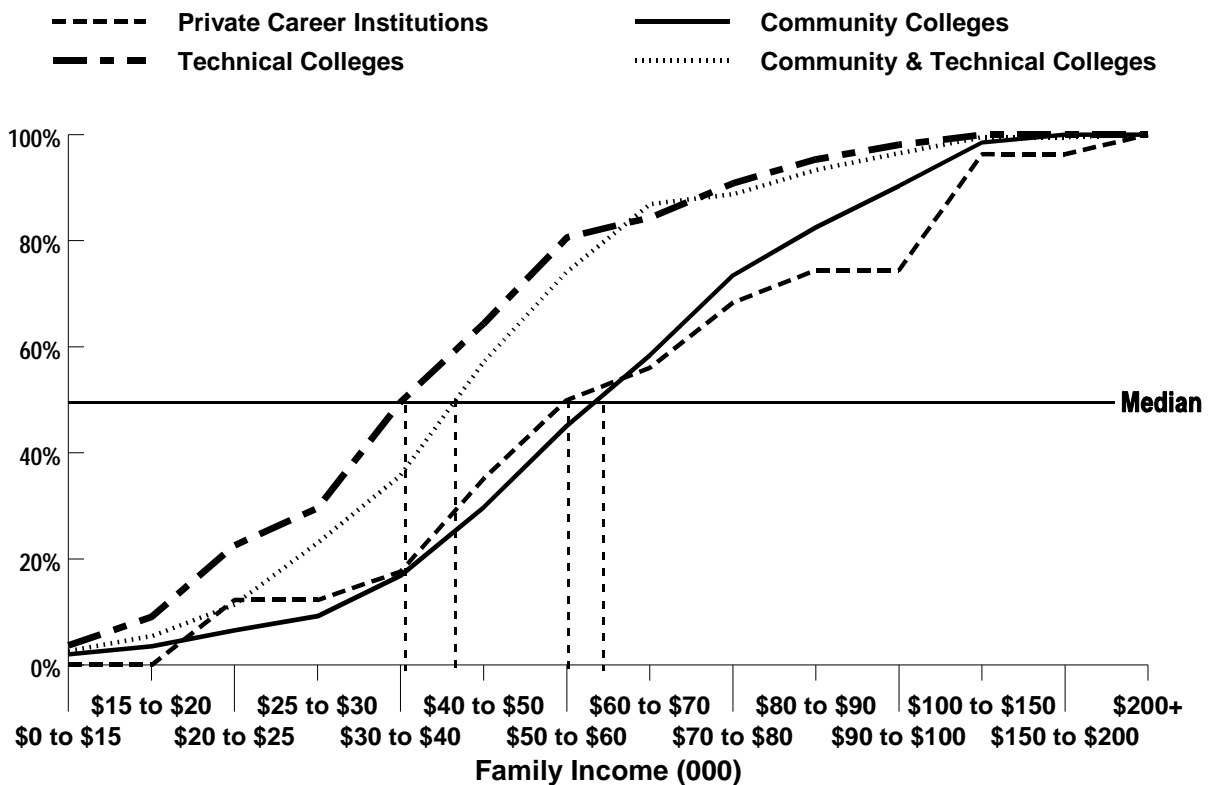
Weighted n = 57,071  
 \*Chi Square Test of Independence Results: Institution attended contingent on income. p=.001  
 Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

### Cumulative Distributions of Family Income by Type of Institution

To further illustrate the relationship between family income and institutional choices for new entering Minnesota freshmen just graduating from high school, cumulative distributions at two and four-year institution types by family income are shown in the following pages. Lines skewed to the left on these two graphs represent a population of new-entering Minnesota high school graduates from families with generally lower incomes. Likewise, lines skewed to the right represent a population of new-entering Minnesota high school graduates from families with generally higher incomes.

In the two-year and less than two-year sectors, the distributions of students attending private-for-profit career institutions and community colleges are skewed more toward the right than the distribution of students at technical and community and technical colleges. New-entering Minnesota high school graduates who attended technical and consolidated community and technical colleges were generally from families with lower incomes than students who attended community colleges and private career institutions.

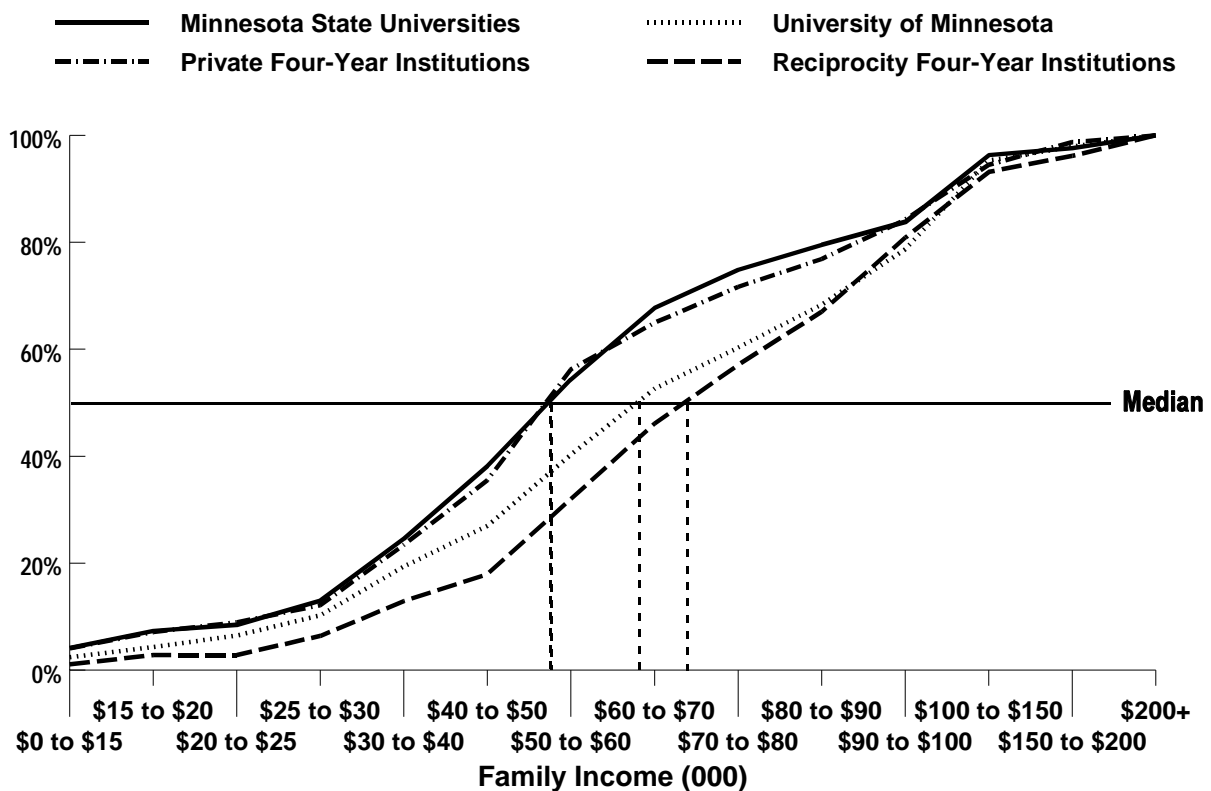
### Cumulative Distribution of New Entering Students at 2-Year Institutions by Family Income



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

In the four-year sector, reciprocity institutions and the University of Minnesota were skewed more toward families with higher incomes. Minnesota State Universities and private four-year institutions had similar distributions. The family incomes of Minnesota students who attended these two institution types were almost identical. As a group, new-entering Minnesota high school graduates who attended reciprocity four-year institutions were from families who had the highest income, compared to other types of institutions.

### Cumulative Distribution of New Entering Students at 4-Year Institutions by Family Income



Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases

### Median Family Income by Type of Institution

An additional way to compare student institutional choice by family income is to look at the median family income of students attending different types of institutions.

- Median family income was lowest, \$30,000 – \$40,000, for new-entering Minnesota high school graduates who attended technical colleges and consolidated community and technical colleges.
- Students who attended Minnesota State Universities and private four-year institutions were from families with a median income of \$40,000 – \$50,000.
- The median family income of students who attended community colleges, private career institutions and the University of Minnesota was \$50,000 – \$60,000.
- The highest median family income, \$60,000 – \$70,000, was for new-entering high school graduates who enrolled in reciprocity four-year institutions.

Class of 1999: Students' Median Family Income by Choice of Institution	
Institution Type	Median Family Income
Technical Colleges	\$30,000-\$40,000
Community & Technical Colleges	\$30,000-\$40,000
Minnesota State Universities	\$40,000-\$50,000
Private Four-Year Institutions	\$40,000-\$50,000
Community Colleges	\$50,000-\$60,000
Private Career Institutions	\$50,000-\$60,000
University of Minnesota	\$50,000-\$60,000
Reciprocity Four-Year Institutions	\$60,000-\$70,000

*Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Databases*

## **Post-Secondary Decisions as Related to Family Income**

The experiences of 1999 Minnesota high school graduates suggest that despite public policies to provide post-secondary access and choice to all Minnesota students, family income still affects post-secondary decisions. As family income increased, the proportion of students who enrolled in a Minnesota or reciprocity institution increased. Students were more likely to have chosen to attend four-year institutions as family income increased. In general, family incomes of students who attended reciprocity four-year institutions, the University of Minnesota, community colleges and private career institutions were higher than at other institution types. Despite these differences, students from all income types attend all kinds of institutions.

Students from low-income families face a variety of challenges on the path to post-secondary education. Tuition, for example, has been rising faster than family income,<sup>15</sup> which leads to an increased financial burden for families if financial aid does not keep pace. Families typically overestimate and are uncertain of the cost of attendance, fueling the perception that attendance is out of reach because of price.<sup>16</sup> Students with parents unfamiliar with the application, enrollment and financial aid process are at a disadvantage. Each of these factors affects the post-secondary decision-making processes of students and their families.

Despite these hurdles, many students from low-income families do attend college. Part IV will examine experiences that were associated with college attendance by students from families earning less than \$25,000.

## **Part IV:**

### **What family and school experiences appear to lead to higher participation by students from low-income families?**

The data presented in parts I through III indicate that students from families with low incomes are not choosing to pursue a post-secondary education immediately after high school with the same frequency as students from higher income families. The cost of a post-secondary education may be daunting for students from low-income families, and success may take greater commitment and better planning. However, many students from lower income families do choose to go on despite financial challenges.

This part of the study focuses on students from families with incomes of \$25,000 or less. These students comprise about 11 percent of all graduating Minnesota high school seniors. Using data from Minnesota High School Follow-Up Survey questions and Student Enrollment Record Databases, high school experiences of these students were matched with post-secondary enrollment records and investigated using the methodology described in the appendix.

Extensive data on critical skill attainment and parental involvement are collected by the follow-up survey. Previous national studies have found significant links between both secondary educational choices and parent involvement and post-secondary outcomes.<sup>17</sup> Significant links between these variables and post-secondary outcomes are important because they can be influenced by individuals and public policy.

#### **Critical Skills/Competency Areas**

Six questions on the follow-up survey assess academic experiences and abilities of graduating high school seniors. Each question asks the senior to respond with “extent to which you have mastery of the skill to pursue your fall plans.” The student can respond with one of three answers: little or no mastery, partial or some mastery, or full mastery.

Self-reported mastery in any of the following six critical skill/competency areas was related to increased odds of immediately attending a post-secondary institution upon high school graduation for students from families with incomes of \$25,000 or less:

- Communicate in a language other than English such as a foreign language or computer programming language (+285 percent increase in odds of enrolling).
- Understand and apply scientific knowledge and methods of inquiry related to such fields as biology, chemistry, physics or environmental science (+148 percent increase in odds of enrolling).



- Use research to solve problems, organize ideas and understand complex issues (+120 percent increase in odds of enrolling).
- Read and interpret written information including fiction, non-fiction and technical documents (+69 percent increase in odds of enrolling).
- Use math to help solve problems and make decisions (+45 percent increase in odds of enrolling).
- Write for a variety of purposes and situations, including creative writing, technical writing, and business letters. (+34 percent increase).

Mastery in a language other than English had the strongest relationship with immediate enrollment in a post-secondary institution for students from low-income families. Having pursued this critical skill with some success in high school increased the odds of enrollment by 285 percent. Students who are committed early to enrolling in post-secondary education usually are advised to take certain courses in high school. Enrolling in a foreign or computer language course is a tangible step often taken by students who are committed to enrolling in post-secondary education in their immediate future.

The relationships between mastery of reading, math and writing and post-secondary enrollment may not be as strong because a large proportion of high school students gain at least partial mastery of these skills, even if they have no post-secondary educational plans. Students who pursue foreign language and science are a select group that is much more likely to have educational goals beyond high school.

Students who reported little or no mastery of critical academic skills and competencies were much less likely to enroll than students who reported some mastery.

Furthermore, the more critical skill/competency areas students from a low-income families claimed to have mastered, the more likely they were to immediately enroll in a post-secondary institution. Students with three to four of the six skills increased their odds of enrolling by 59 percent over students with only one or two of the skills reported. If a student had partial to full mastery in five or six of the critical skills/competency areas, the odds of enrolling increased 918 percent compared to students with 2 or less.

## **Parent/Teacher Involvement**

The effects of parent/teacher involvement on post-secondary education attendance the fall following high school graduation were evaluated by answers to questions from the Student Survey and accompanying Parent/Guardian Survey. On the Student Survey, the section used to assess a student's high school experience has specific questions about teachers. Students were asked to assign a grade to their teachers, based on their overall high school experience.

Increased parent/teacher involvement increased the odds of immediately enrolling in post-secondary education for students from low-income families in most cases. Students whose parents regularly attended their extra-curricular activities were more likely to enroll in post-secondary education. There was an 82 percent increase in the odds of enrolling compared to students whose parents did not regularly attend.

Relatively weaker, positive significant relationships existed between immediate enrollment and:

- Access to teachers (+37 percent increase in odds of enrolling).
- Parents having a significant role in student's post-secondary plans (+28 percent increase in odds of enrolling).
- Teachers' ability to stimulate thinking (+27 percent increase).

One variable – personal attention and support from teachers – was found to not have a significant relationship with immediate post-secondary enrollment for students from low-income families.

The only variable which was negatively related to immediate post-secondary enrollment for students from low-income families was parental saving for their child's education and other activities after high school. There was a 21 percent decrease in the odds of enrolling for students who had parents who saved for their education and other activities after high school, compared to students whose parents did not save for their child's education and activities after high school. This result does not mean that saving for college is not important, but saving by itself may not be a motivating factor for immediate enrollment for students from low-income families.

An index of parent/teacher involvement also showed significant relationships. Students with parents and teachers involved in their lives on five or six measures increased their odds by 98 percent compared to students with a score of two or less. Students with parents and teachers involved in their lives on three or four of six measures increased their odds of enrolling in a post-secondary institution immediately after high school by 58 percent.

## **Implications**

There has been a long established link between income and post-secondary educational choices. The most significant choice, the choice to attend, is affected by family income. Students from families with incomes less than \$25,000 attend post-secondary institutions at lower rates than their peers. Minnesota strives to provide the same post-secondary educational opportunities for everyone. Yet here, as across the country, students from families with limited financial means are not making the same transition from high school to college as students from families with higher incomes. In addition to paying attention to financial access for these students, public policy also can address other factors that will enable all students to consider post-secondary education.

Students from low-income families who immediately enrolled in post-secondary education said they actively mastered critical skills and competencies to a greater degree than students from low-income families who did not enroll immediately. These students also had parents and teachers who were more involved in their school lives than their non-attending peers.

In general, students from low-income families are not achieving the same level of critical skill attainment and are not experiencing the same level of parent/teacher involvement as their peers. Statistical differences between groups were significant and strong. Creating awareness of the relationships between secondary academic choices, parent/teacher support and enrollment in post-secondary education can be a move towards providing equal post-secondary educational opportunities for children from low-income families.

## Conclusion

Merged data from the Minnesota High School Follow-Up Survey and student enrollment records provide new insights into the post-secondary enrollment decisions of new Minnesota high school graduates.

Among the most valuable tools in the data are information on students who do not attend post-secondary education and the ability to analyze enrollment decisions by family income. Despite policies to erase barriers to post-secondary education, family income is still related to attendance. Planning to enroll in post-secondary education is a key indicator of who is going to enroll. Students must become planners at some point if they are going to enroll at a post-secondary institution. Students from low-income families are less likely to plan on enrolling and those who do plan to enroll are less likely to carry out their plans than students from higher income families.

Family income also influences the type and location of institution students attend. Students from low-income families are much more likely to attend a two-year institution than students from higher income families. As family income increases, so does the likelihood that the student will attend an institution outside Minnesota.

Increased critical academic skills and competencies as well as better parent/teacher involvement appear to be related to increased post-secondary enrollment. These variables can be influenced to increase opportunity in the future.

## Appendix

A description of the survey methodology, including the sample frame, a summary of sample weights and standard errors is available by contacting the Minnesota Department of Children, Families & Learning.

### Logistic Regression Methodology

Twelve variables are included in the following logistic regression models. The variables were chosen because they represented the best indicators on the survey of high school critical academic skill attainment and parent/teacher involvement.

The twelve variables can be classified into two groups of six: critical skills/competency attainment and parent/teacher involvement.

**Critical skills** are assessed by a set of six questions on the Student Survey designed to assess academic experiences and abilities of graduating high school seniors. Each question asks the senior to respond with “extent to which you have mastery of the skill to pursue your fall plans.” The student can respond with one of three answers: little or no mastery, partial or some mastery, or full mastery. For the regression model, students who answered little or no mastery are the reference group. These six questions identify core academic skills a student can develop in order to increase the chances of being successful in a post-secondary setting. The six “critical skill and competency areas” included in this analysis are:

1. Read and interpret written information including fiction, non-fiction and technical documents.
2. Write for a variety of purposes and situations, including creative writing, technical writing, and business letters.
3. Use math to help solve problems and make decisions.
4. Use research to solve problems, organize ideas and understand complex issues.
5. Communicate in a language other than English such as a foreign language or computer programming language.
6. Understand and apply scientific knowledge and methods of inquiry related to such fields as biology, chemistry, physics or environmental science.

**Parent/teacher involvement** was assessed by a combination of questions from the Student Survey and accompanying Parent/Guardian Survey. On the Student Survey, the section used to assess a student’s high school experience has specific questions about teachers. Students were asked to assign a grade to their teachers, based on their overall high school experience. Students who graded their teachers with a “C” or lower are the reference group. The questions used on the surveys to gather data to determine relationships between these sets of variables are:

1. Teachers' ability to stimulate your thinking and interest in learning.
2. Access to your teachers in and out of the classroom and after school.
3. Personal attention and support you received from teachers in pursuit of your learning.

On the Parent/Guardian Survey, three questions are used to ascertain parental involvement:

1. Which best describes your/your spouse's role in your child's plans for after high school? (Respondents chose between no input, limited input and significant input)
2. Did you save money in order to help your child financially with his/her plans for after high school?
3. (Did you) regularly attend extracurricular events (sports, concerts, science fairs, etc.)?

Two logistic regression models were run to determine if critical skill attainment and parent/teacher involvement have a relationship with immediate post-secondary enrollment for students from lower income families. The first model treated all twelve variables discretely. The reference group in this model is the absence of the skill or involvement attribute. The second model categorized the variables into two indexes, as described by the grouping of questions above. The reference group in this model is a score of zero to two out of six.

By using the exponential function ( $e^x$ ) on logistic regression coefficients, it is relatively intuitive to interpret their meaning. The exponential function transforms the coefficient into an odds ratio. The strength and direction of the relationship between the independent variables and the dependent variable (enrolling in a post-secondary institution) can be assessed by the odds ratio. When an odds ratio is greater than one, going from the value of the independent variable associated with the reference group to the value of the independent variable associated with the non-reference group increases the odds that the student will enroll in post-secondary education the fall following high school graduation.

For example, the odds ratio for the independent variable of reading comprehension is 1.69. This means that having some or full mastery (non-reference group) of the critical skill reading comprehension is associated with increased odds of enrolling. Furthermore, the odds ratio can be interpreted as percent change in odds. In the example just mentioned, acquiring some reading comprehension skills increases the odds of enrolling by 69 percent as compared to the reference group (acquiring little or no mastery in reading comprehension), when all other variables are held constant.

**Graduating Minnesota High School Seniors from Low-Income Families Enrolling in a Minnesota or Reciprocity Agreement Institution the Fall Following Graduation by Parent-Teacher Involvement and Student Skills: Two Logistic Regression Models**

	p (significance)	Odds Ratio	Percent Change in Odds of Enrolling Compared to Reference Group
<b>Model 1: Discrete Model</b>			
Critical Skills/Competency Areas			
Reading Comprehension	.00	1.69	69%
Writing Skills	.02	1.34	34%
Math Competency	.00	1.45	45%
Utilization of Research Skills	.00	2.20	120%
Communicate in a Foreign Language	.00	3.85	285%
Understand & Apply Scientific Knowledge	.00	2.48	148%
Parental Involvement			
Significant Role in Post-H.S. Plans	.00	1.28	28%
Save \$ For Child's Post-H.S. Plans	.00	0.79	-21%
Regularly Attend Extra-Curricular Activities	.00	1.82	82%
Teacher Involvement			
Teachers' Ability to Stimulate Thinking	.00	1.27	27%
Access to Teachers	.00	1.37	37%
Personal Attn. & Support from Teachers	.64	0.96	---
Intercept Beta = -4.70			
<b>Model 2: Index Model</b>			
Critical Skills/Competency Area Score			
0-2 (Reference Group)	---	---	---
3-4	.05	1.59	59%
5-6	.00	10.18	918%
Parent/Teacher Involvement Score			
0-2 (Reference Group)	---	---	---
3-4	.00	1.58	58%
5-6	.00	1.98	98%
Intercept Beta = -1.43			

Source: Dept. of Children, Families & Learning: 1999 Minnesota High School Follow-Up Survey; Minnesota Higher Education Services Office: Student Enrollment Record Database

## Endnotes

1. United States Census Bureau (2000, September) 1999 Current Population Survey, March Supplement.  
[http://ferret.bls.census.gov/macro/032000/perinc/new03\\_021.htm](http://ferret.bls.census.gov/macro/032000/perinc/new03_021.htm)
2. Minnesota Department of Children, Families & Learning, *The 1997 Minnesota High School Follow-Up Survey, Statewide Overview*.  
Minnesota Department of Children, Families & Learning, *The 1998 Minnesota High School Follow-Up Survey, Statewide Overview*.  
Minnesota Department of Children, Families & Learning *The 1999 Minnesota High School Follow-Up Survey, Statewide Overview*, March 2000.  
Minnesota Department of Children Families & Learning,, *The Minnesota High School Follow-Up Survey, Trend Report*.  
Minnesota Department of Children, Families & Learning, *Class of 1997 Three-Year Follow-Up, State Overview*.
3. “Reciprocity institutions” include all North Dakota, South Dakota, and Wisconsin public institutions, six Manitoba public institutions, and one Iowa community college that are included in tuition reciprocity benefit agreements with Minnesota.
4. United States Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System, “Fall Enrollment” Surveys 1995-1997.
5. U.S. Department of Education, National Center for Education Statistics. *The Condition of Education 1998*. NCES 98-013. Washington, DC: U.S. Government Printing Office, 1998.
6. U.S. Department of Education, National Center for Education Statistics. *The Condition of Education 2000*. Washington, DC: U.S. Government Printing Office, 2000.  
<http://nces.ed.gov/programs/coe/2000/section3/indicator30.html>
7. Cabrera, A. & La Nasa, S. (2000) Overcoming the Tasks on the Path to College for America’s Disadvantaged. *New Directions for Institutional Research* 107: 31-43.
8. U.S. Department of Education, National Center for Education Statistics. *The Condition of Education 2000*. Washington, DC: U.S. Government Printing Office, 2000.  
[http://nces.ed.gov/pubs2000/coe2000/section3/s\\_table32\\_3.html](http://nces.ed.gov/pubs2000/coe2000/section3/s_table32_3.html)
9. Minnesota Higher Education Services Office (1999, May) Ten Year Trend: Students of Color Make Up Most Enrollment Growth. *Insight*.
10. See endnote 2.



11. Sax, L. J., Astin, A. W., Korn, W. S. and Mahoney, K. (1999) *The American Freshman: National Norms for Fall 1999*. Los Angeles, CA: Higher Education Research Institute, University of California-Los Angeles.
12. Cabrera, A. and La Nasa, S. (2000) Understanding the College Choice Process. *New Directions for Institutional Research* 107: 5-22.
13. Cabrera, A. and La Nasa, S. (2000) Overcoming the Tasks on the Path to College for America's Disadvantaged. *New Directions for Institutional Research* 107: 31-43.
14. See endnote 5.
15. Davis, J. (1997) *College Affordability, A Closer Look at the Crisis*. Washington, DC: Sallie Mae Education Institute.
16. U.S. Department of Education, National Center for Education Statistics. *The Condition of Education 2000*. Washington, DC: U.S. Government Printing Office, 2000.  
<http://nces.ed.gov/programs/coe/2001/section3/indicator25.html>
17. Adelman, C. (1999) *Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment*. Washington, DC: U.S. Department of Education, National Center for Education Statistics.  
Also, see endnote 12.