

Cabrillo College

**Academic Achievement between
Disabled and Mainstream Students
at Cabrillo College**

Terrence Willett
Research Technician
Office of Institutional Research
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Summary

- Disabled students are more likely than mainstream students to obtain associate's degrees.
- Disabled students attempt and complete more units than mainstream students.
- Transfer rates and GPA's seem equivalent for disabled and mainstream students.
- English 100 retention appears stable over time and more positive for disabled students.
- English 100 success appears equal between groups but shows a decline for disabled students.
- Math 152 retention is increasing for all but remains higher for mainstream students.
- Math 152 success is increasing for mainstream students while disabled rates are below mainstream rates.

Introduction

Disabled students at Cabrillo are offered a variety of support services to aid their academic achievement such as private tutors and notetakers. Ideally, disabled students should experience a level of success equivalent to their mainstream counterparts assuming that individual factors such as motivation and financial resources are equal. To measure whether this ideal is being approached, this report presents comparisons between mainstream and disabled students on degree awards, transfer rates, units attempted and completed, grade point average (GPA) and retention and success in selected courses. This report does not exhaust the possible comparisons that could be made but it does provide an indication of relative achievement between mainstream and disabled students.

Methods

Disabled students were identified through the campus' Datawarehouse and include those who are mobility, visually, hearing, or speech impaired, developmentally delayed, brain injured, and learning or psychologically disabled as well as other disabilities. Mainstream students are those who were not identified as having a disability.

Transfer data came from three sources. One source is the final transcript requests submitted by Cabrillo students. It was assumed that those who submitted only one request intended to attend that institution. If multiple requests were submitted in the same or sequential years, they were not included for analysis as it is impossible to determine which institution they actually attended, if any. If multiple requests were separated by more than two years, the most recent request was used. In all cases, it is unknown from this data if the student actually attended these institutions; however, it is the best data available for most institutions.

The second source is data from the University of California at Santa Cruz (UCSC) and the third is data from San José State University (SJSU). Both these institutions have provided Cabrillo with data on their students who transferred from Cabrillo. These sources are more reliable, which is especially good as roughly two-thirds of our transfers go to UCSC or SJSU. Only UCSC and SJSU transfer values were used for chi-square analysis as the data are more reliable and cover equivalent time periods.

Data on program awards, units, GPA, retention, and success were all derived from the Datawarehouse. Retention and success were calculated for English 100, Elements of Writing, and Math 152, Intermediate Algebra. Retention is the proportion of students who received a grade of A, B, C, D, F, CR, NC, or I or more simply, those who completed the course. Success is the proportion of students who received a grade of A, B, C, or CR. I selected these two classes for comparison, as they are the highest non-transfer level courses in the fundamental disciplines of English and Math. They are also prerequisites for many academic courses. As such, they are gateway classes through which degree or transfer oriented students must pass and should serve as an indication of academic retention and success in general.

Chi-square and analyses were computed with Excel 97 and SPSS 10.0.5.

Results

About 8% of all enrolled students are disabled (Table 1, Figure 1). A significantly higher percentage of disabled students than expected obtained associate's degrees especially in the 95-96 and 98-99 program years (Table 2, Figure 2; $\chi^2 = 47.2$, $df = 5$, $p < 0.0005$). The relative proportion of awards obtained by disabled students has been showing a weakly linear increase of 0.76% per year ($t = 2.11$, $df = 4$, $p = 0.10$).

Transfers rates of disabled students are not significantly different from mainstream students (Table 3, Table 4, Figure 3; $\chi^2 = 3.0$, $df = 3$, $p = 0.40$).

In Fall 1998 and Spring 1999, the mean GPA of mainstream students was 0.02 grade point higher than disabled students. This difference does not appear to be meaningful nor is it significant ($t = 0.809$, $df = 1554.498$, $p = 0.419$ for Spring 1998 and $t = 0.878$, $df = 1183.178$, $p = 0.380$ for Fall 1999). For Fall 1998 and Spring 1999, disabled students attempted 2 to 4 more units than mainstream students. This difference is equivalent to about one course and is significant ($t = -2.795$, $df = 1384.960$, $p = 0.005$ for Spring 1998 and $t = -3.827$, $df = 1331.183$, $p < 0.0005$). In the same semesters, disabled students had completed 6 to 7 more units than mainstream students. This difference is equivalent to about two 3 units courses and is significant ($t = -5.646$, $df = 1352.586$, $p < 0.0005$ for Spring 1998 and $t = -6.552$, $df = 1269.508$, $p < 0.0005$ for Fall 1999).

Retention and success for English 100 and Math 152 in regular school terms (not summer terms) are presented in Table 6, Figure 4, Figure 5, Figure 6, and Figure 7. English 100 retention shows no significant linear trend over time for mainstream or disabled. English 100 success shows no significant linear trend for mainstream students but shows a significant decline of about 1.10% per term for disabled students. Retention for Math 152 shows a significant increase of about 0.51% per term for mainstream students and about 0.68% per term for disabled students. Success for Math 152 shows a significant increase of about 0.66% for mainstream students but no significant linear trend for disabled students.

The study also examined overall retention and success in regular terms from Spring 1993 to Spring 1999 for English 100 and Math 152. Disabled students are more likely to complete English 100 than mainstream students (Table 7). Mainstream and disabled

students show no significant difference in succeeding in English 100 (Table 8). Mainstream students are more likely to complete Math 152 than are disabled students (Table 9). Mainstream students are more likely to succeed in Math 152 than are disabled students (Table 10).

Discussion

Compared to mainstream students, disabled students have equivalent transfer rates and GPA's, attempt and complete more units on average, and obtain associate's degrees at higher and possibly increasing rates. English 100 retention appears stable over time and generally more positive for disabled students. While success in English 100 is currently equivalent between mainstream and disabled students, disabled students are showing a downward trend. Math 152 retention is increasing for all but remains higher for mainstream students. Math 152 success is increasing only for mainstream students while disabled success rates remain below mainstream rates. This suggests that English 100 achievement appears neutral to positive for disabled students while Math 152 achievement appears more difficult for disabled students but with some indication of improvement.

These data are all favorable to the claim that, in general, disabled students are able to meet and overcome challenges to their academic goals at Cabrillo. However, there are some concerns with retention and success in Math 152 for disabled students. As this class is needed to transfer and is required for many science courses such as Physics and Chemistry, efforts should be made to identify what barriers disabled students are having in pursuing Intermediate Algebra and direct resources to aid student efforts. Identifying these barriers could begin with interviews or surveys of disabled students, faculty, and Disabled Students Programs and Services staff to guide a research protocol.

Table 1. Percentage of mainstream versus disabled student enrollment.

Enrollment	% Mainstream	% Disabled
93-94	93.5	6.5
94-95	91.9	8.1
95-96	92.3	7.7
96-97	92.2	7.8
97-98	91.7	8.3
98-99	91.8	8.2

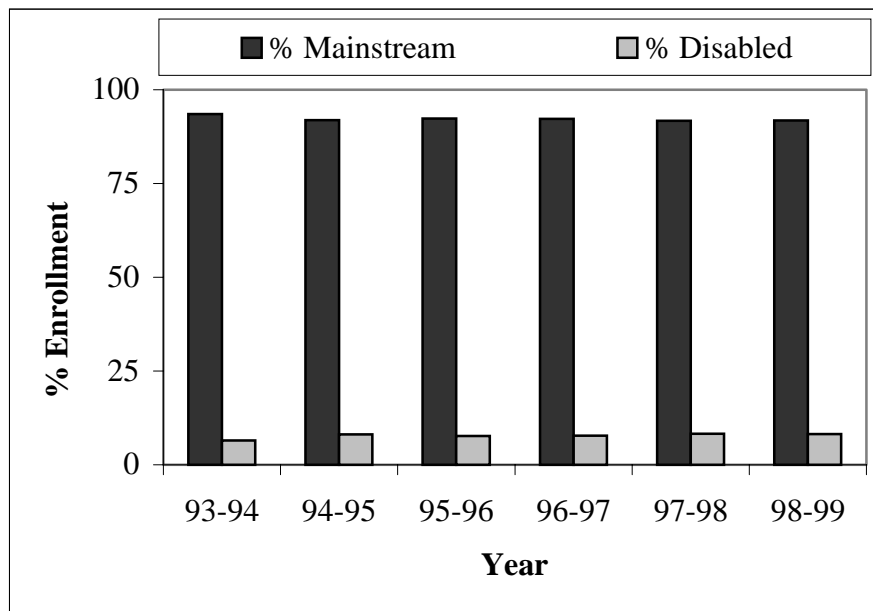


Figure 1. Percent enrollment of mainstream and disabled students.

Table 2. Associate awards of mainstream versus disabled students.

AA/AS awards year	Mainstream		Disabled		Total
	N	%	N	%	N
93-94	450	91.5	42	8.5	492
94-95	409	91.9	36	8.1	445
95-96	436	87.2	64	12.8	500
96-97	482	89.8	55	10.2	537
97-98	496	88.3	66	11.7	562
98-99	511	87.8	71	12.2	582
Total	2784	89.3	334	10.7	3118

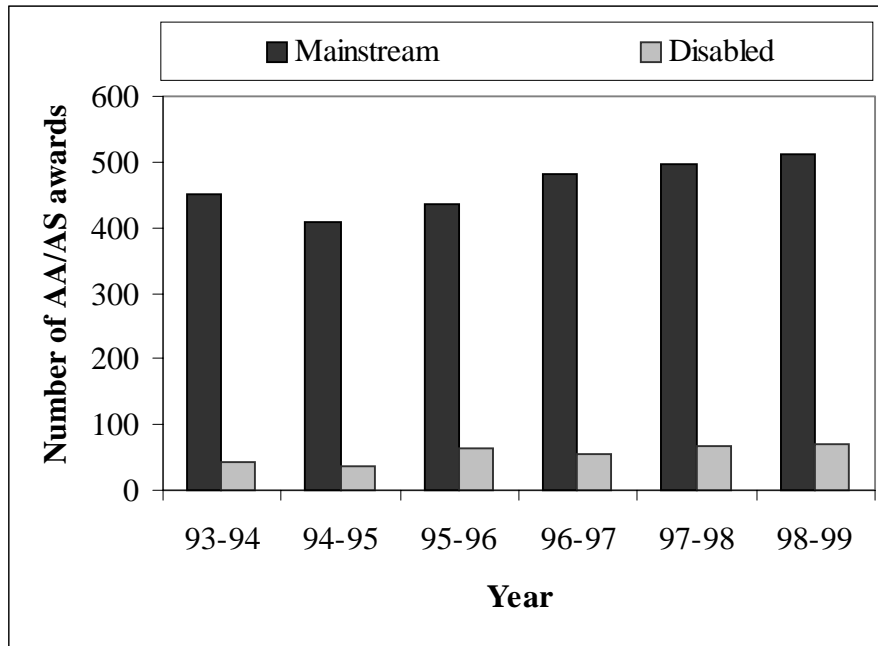


Figure 2. Associate awards obtained by mainstream and disabled students.

Table 3. Transfers of mainstream and disabled students.

year	UCSC transfers		SJSU transfers		other transfers	
	Mainstream	Disabled	Mainstream	Disabled	Mainstream	Disabled
94-95	253	24	131	13	na	na
95-96	241	16	236	33	na	na
96-97	257	16	157	15	305	83
97-98	267	21	150	13	139	55
98-99	na	na	na	na	167	67

na = not available

Table 4. Transfer rates of mainstream and disabled students to UCSC and SJSU.

year	Mainstream		Disabled	
	N	%	N	%
94-95	384	91.2	37	8.8
95-96	477	90.7	49	9.3
96-97	414	93.0	31	7.0
97-98	417	92.5	34	7.5

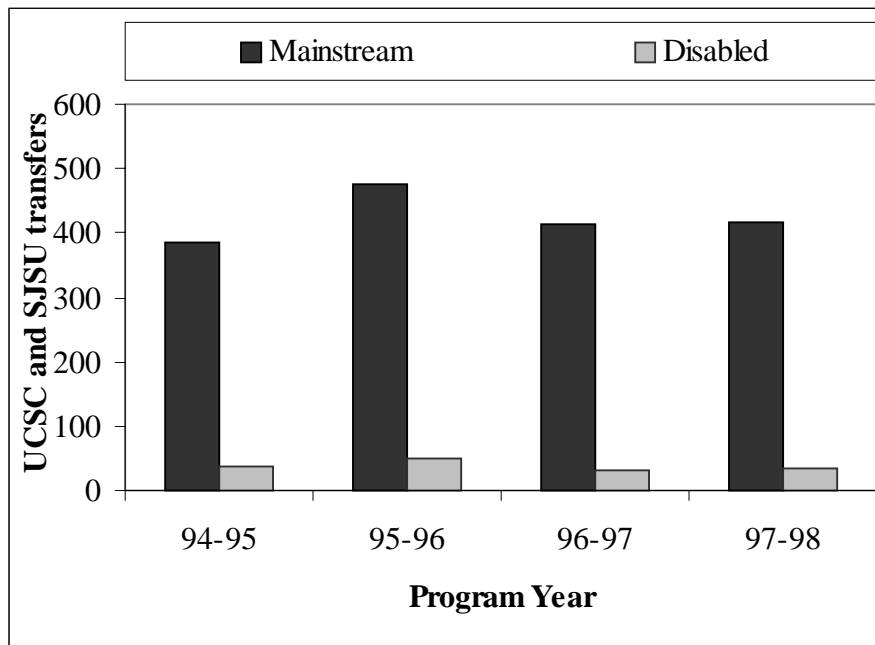


Figure 3. Transfers of mainstream and disabled students to UCSC and SJSU combined.

Table 5. Mean GPA with completed and attempted units of mainstream and disabled students.

	Fall 1998		Spring 1999	
	Mainstream	Disabled	Mainstream	Disabled
GPA	3.07	3.05	3.10	3.08
Units Attempted	23 ^a	25 ^a	25 ^b	29 ^b
Units Completed	25 ^c	31 ^c	26 ^d	33 ^d

Note: Entries with the same superscript are significantly different from each other at the 0.05 level.

Table 6. Retention and success in English 100 and Math 152 between mainstream and disabled students.

		ENGL100 retention		ENGL100 success		MATH152 retention		MATH152 success	
		Main	Dis	Main	Dis	Main	Dis	Main	Dis
Spring 1993	%	67.0	83.6	59.1	72.7	74.3	64.9	55.7	54.4
	N	509	55	509	55	661	57	661	57
Fall 1993	%	74.2	71.4	62.7	59.5	74.2	62.9	52.6	37.1
	N	528	42	528	42	643	70	643	70
Spring 1994	%	66.0	75.9	56.1	72.2	69.8	64.9	49.7	44.6
	N	556	79	556	79	630	74	630	74
Fall 1994	%	76.1	90.2	61.3	75.0	70.0	74.2	49.5	51.6
	N	943	92	943	92	647	62	647	62
Spring 1995	%	66.9	61.5	52.5	58.5	68.3	58.8	51.5	41.2
	N	732	65	732	65	653	51	653	51
Fall 1995	%	72.4	82.7	57.4	59.3	70.6	69.6	54.4	45.7
	N	914	81	914	81	688	46	688	46
Spring 1996	%	63.3	62.7	51.8	45.1	71.2	64.2	56.6	49.3
	N	683	51	683	51	680	67	680	67
Fall 1996	%	76.0	75.7	63.2	62.2	74.1	73.1	54.4	51.9
	N	843	74	843	74	686	52	686	52
Spring 1997	%	64.9	75.4	52.4	65.6	71.0	77.3	55.1	63.6
	N	653	61	653	61	680	44	680	44
Fall 1997	%	75.4	74.6	66.9	66.2	76.1	71.4	55.1	38.8
	N	812	71	812	71	682	49	682	49
Spring 1998	%	76.6	71.9	63.9	51.6	76.9	73.3	58.7	48.3
	N	740	64	740	64	654	60	654	60
Fall 1998	%	82.9	81.3	72.3	61.3	77.0	68.6	58.0	45.1
	N	865	75	865	75	664	51	664	51
Spring 1999	%	66.3	64.1	55.2	53.1	78.1	69.8	61.0	51.2
	N	683	64	683	64	590	43	590	43
Slope (%/term)		0.43	-0.61	0.43	-1.10	0.51	0.68	0.66	0.26
r		0.28	-0.28	0.27	-0.49	0.61	0.50	0.75	0.15
t(11)		0.98	-0.95	0.93	-1.87	2.58	1.93	3.77	0.49
p		0.35	0.36	0.37	0.09	0.03	0.08	0.003	0.64

Main = Mainstream, Dis = Disabled

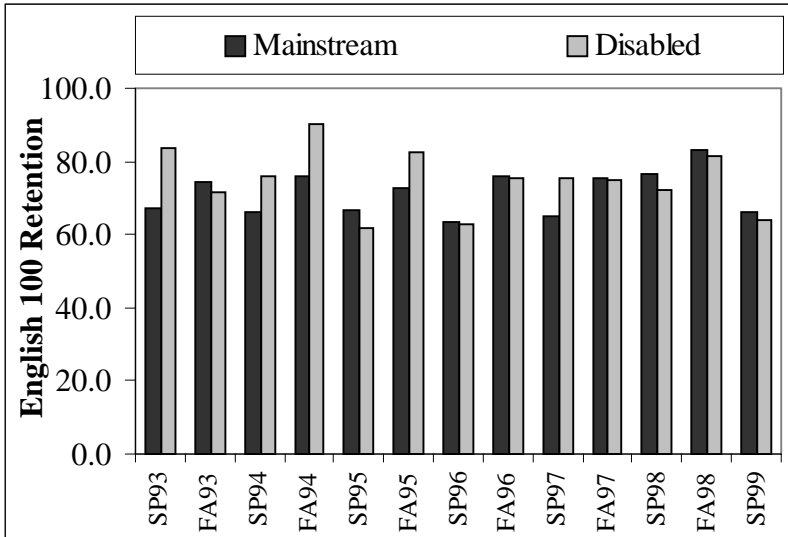


Figure 4. Retention rates for English 100.

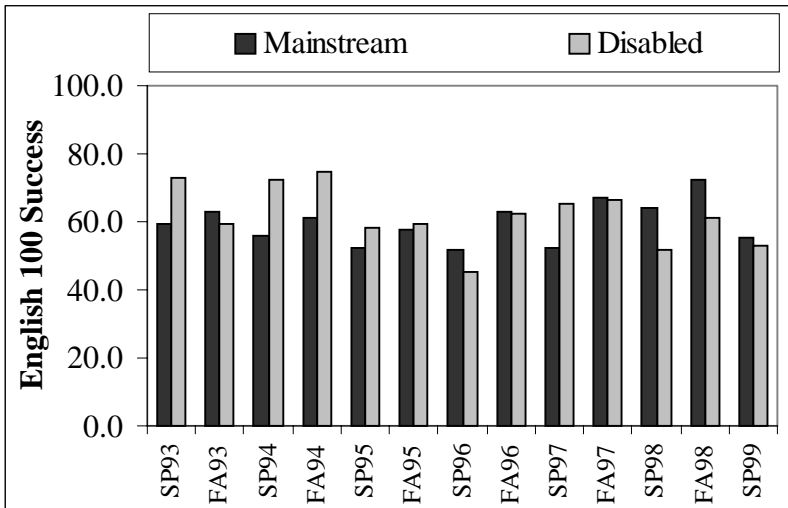


Figure 5. Success rates for English 100.

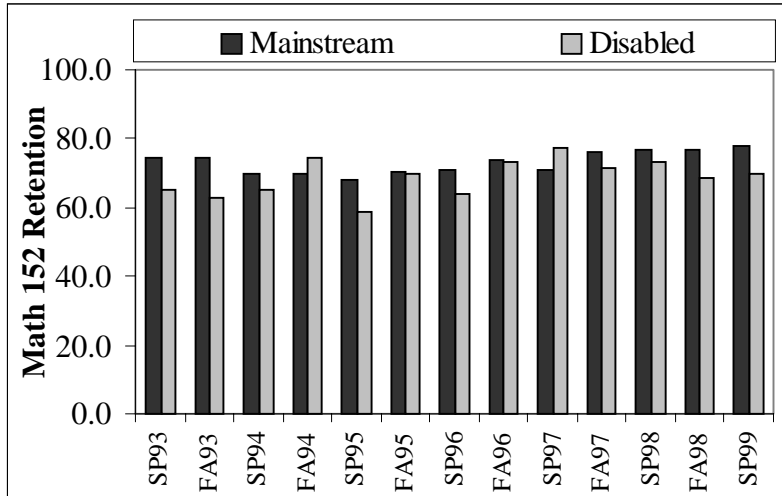


Figure 6. Retention rates for Math 152.

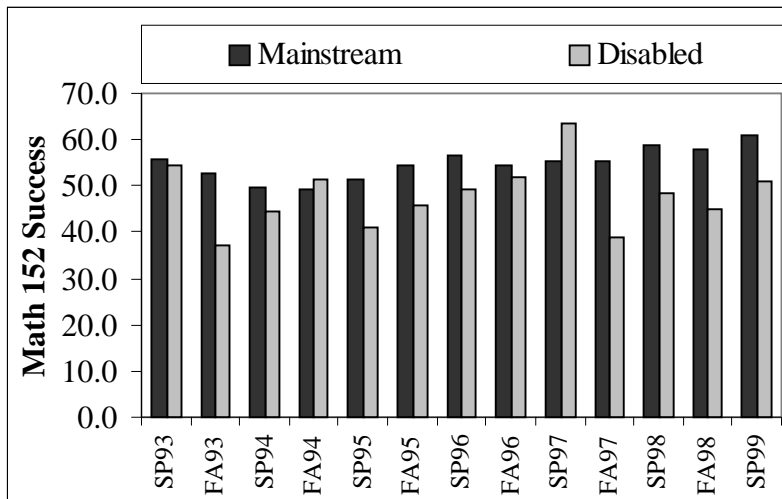


Figure 7. Success rates for Math 152.

Table 7. Retention analysis for all English 100 classes from Spring 1993 to Spring 1999.

		Mainstream	Disabled	Total
complete	N	7285	706	7991
	%	91.2	8.8	
	Adj. Res.	-2.3	2.3	
drop	N	2711	219	2930
	%	92.5	7.5	
	Adj. Res.	2.3	-2.3	
Total		9996	925	10921
χ^2	5.1			
df	1			
p	0.024			

Adj. Res. = adjusted residual. Values beyond ± 2 are considered large departures from values expected if mainstream and disabled students were equally likely to complete the course.

Table 8. Success analysis for all English 100 classes from Spring 1993 to Spring 1999.

		Mainstream	Disabled	Total
failure	N	3886	339	4225
	%	92.0	8.0	
	Adj. Res.	1.3	-1.3	
success	N	6110	586	6696
	%	91.2	8.8	
	Adj. Res.	-1.3	1.3	
Total		9996	925	10921
χ^2	1.8			
df	1			
p	0.183			

Adj. Res. = adjusted residual. Values beyond ± 2 are considered large departures from values expected if mainstream and disabled students were equally likely to succeed.

Table 9. Retention analysis for all Math 152 classes from Spring 1993 to Spring 1999.

		Mainstream	Disabled	Total
complete	N	6814	544	7358
	%	92.6	7.4	
	Adj. Res.	3.4	-3.4	
drop	N	2374	249	2623
	%	90.5	9.5	
	Adj. Res.	-3.4	3.4	
Total		9188	793	9981
χ^2	11.65534			
df	1			
p	0.001			

Adj. Res. = adjusted residual. Values beyond ± 2 are considered large departures from values expected if mainstream and disabled students were equally likely to complete the course.

Table 10. Success analysis of all Math 152 classes from Spring 1993 to Spring 1999.

		Mainstream	Disabled	Total
failure	N	4053	414	4467
	%	90.7	9.3	
	Adj. Res.	-4.4	4.4	
success	N	5135	379	5514
	%	93.1	6.9	
	Adj. Res.	4.4	-4.4	
Total		9188	793	9981
χ^2	19.34689			
df	1			
p	0.000			

Adj. Res. = adjusted residual. Values beyond ± 2 are considered large departures from values expected if mainstream and disabled students were equally likely to succeed.