

MATH MENTORING: THE FUTURE FOR DEVELOPMENTAL MATHEMATICS?

UTAH VALLEY UNIVERSITY

Utah Valley University (UVU) is a regional university located in the beautiful Rocky Mountains near the shores of Utah Lake.





UTAH VALLEY
UNIVERSITY

UVU is an open-enrollment campus that offers associate and technical degrees, baccalaureate degrees, and masters degrees.

The institution serves 32,000 students.

Presenters

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 - Associate Professor
 - Department of Developmental Math

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 - Associate Professor
 - Department of College Success Studies

Presentation Overview



Come discover how a math mentoring program for a developmental mathematics department has taken off with incredible popularity and success. Data will be shared, along with the usual bumps and bruises experienced by a new program.

Objectives

Emphasize key elements in the development of peer mentoring programs for developmental math students

1. Create collaborative partnerships between departments on campus
2. Define program objectives specifically focused on the needs of the students
3. Select and train qualified students who can be math mentors
4. Assess and evaluate the impact of the program
5. Plan for future growth of the program



MATH MENTOR PROGRAM DEVELOPMENT



Campus Initiatives

Student Success and Retention

Collaborative partnerships on campus improve retention of college students by focusing on the differing needs of students within the campus community.

UVU has increased its efforts to provide peer mentoring to first year students—new programs are being developed to address the needs of international students, multicultural students, and students in developmental education.

Creating Partnerships

- The office of Student Success and Retention at UVU has provided Title III grant funding for the development of a new peer mentoring program in Developmental Math
- The Departments of College Success Studies and Developmental Math at Utah Valley University have been working together since Fall 2008 to develop a peer-mentoring program specifically focused on the needs of developmental math students.

Creating Partnerships (continued)

- Faculty in College Success Studies are involved in the on-going training of math mentors.
- Faculty in Developmental Math are creating innovative curriculum aimed at developing students and encouraging peer-centered learning communities by involving peer mentors.

Developmental Math Mentor Program

Math mentors have been assigned to work with an instructor and the students in specific sections of developmental math, including:

Mat 0800	Fundamentals of Arithmetic
Mat 0950	Pre-Algebra
Mat 0980	Pre-Algebra/Elementary Algebra
Mat 0990	Elementary Algebra
Mat 1000	Elementary/Intermediate Algebra
Mat 1010	Intermediate Algebra

Defining Program Objectives

Math Mentor Mission Statement and Goals

- Under the direction of faculty, we work with students to help develop their understanding of mathematical concepts and to help them build mathematical skills; both of which may be applicable to problem solving in their lives.

Defining Program Objectives (continued)

- We aim to benefit a diverse group of students-including those with different perspectives of math and varied approaches to learning-through our involvement both in the classroom and through individual assistance.
- Our goal is to help build students' mathematical confidence and motivation to succeed, and to provide learning tools to aid in their success.



MENTOR TRAINING



Peer Mentor Training

Leadership Mentoring I

- All math mentors must complete this 3 credit-hour course before becoming a mentor.
- The purpose of the course is to introduce mentoring roles and responsibilities

Peer Mentor Training (continued)

- Course Topics
 - Becoming a mentor
 - Understanding the needs of first-year students
 - Defining mentoring roles
 - Building relationships with mentees
 - Increasing self-awareness
 - Communicating effectively
 - Facilitating learning
 - Planning and problem solving
 - Case studies

Math Mentor Training

Leadership Mentoring II

- All math mentors take this 2 credit-hour course during their first semester as a math mentor
- The purpose of the course is to focus on practical application of mentoring skills and real mentoring concerns
- Course Topics
 - ▣ Effective Math Study Skills
 - ▣ Strategies to Conquer Test Anxiety



PROGRAM ASSESSMENT



Possible Limitations and Biases

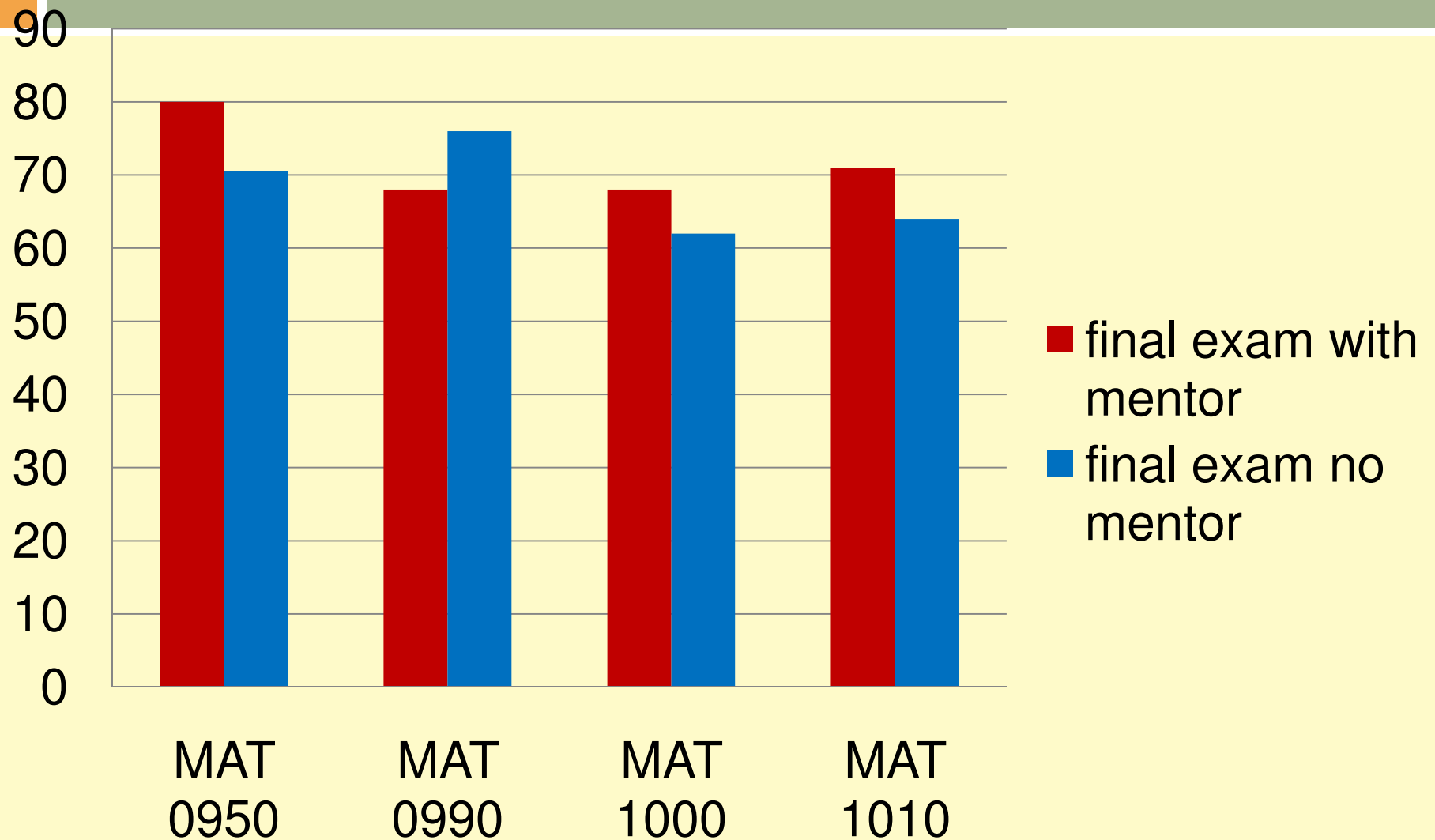
- Variations in instructor rigor
- Possible reasons for not continuing on to next level
- Some students never utilized the mentor assigned to their class
- In some cases it was not possible to have instructor teach one course with a mentor and have another course be the control group.
- Studies for MAT 1010 include one course with an enrollment of 80 students.

Program Assessment Spring 2010

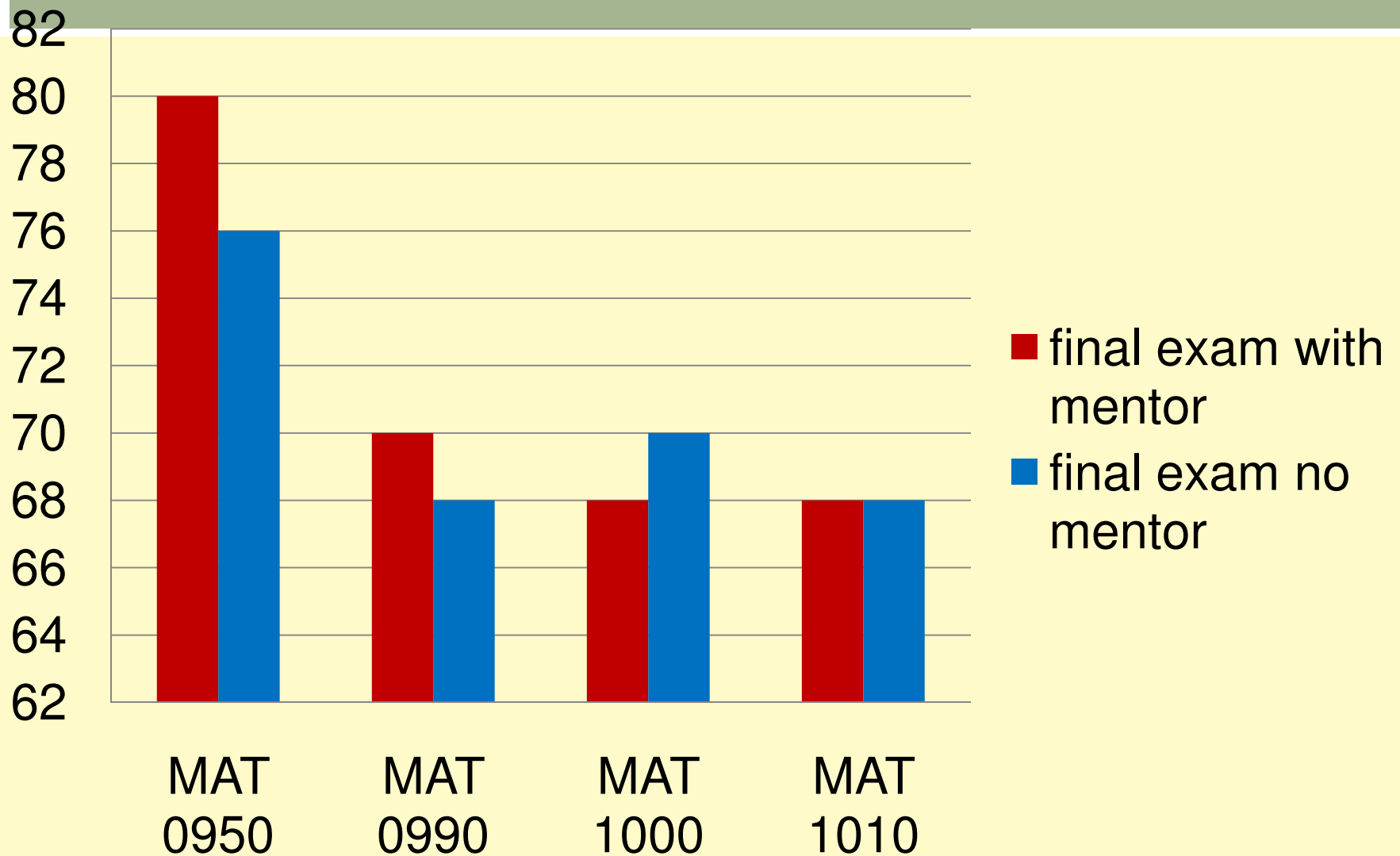


Comparison of Department Final Exam Scores
for Classes With and Without Mentors

Mentored vs. Non-Mentored Courses (Same Instructors for Each Course, Spring 2010)



Mentored vs. Non-Mentored Courses (Entire Department, Spring 2010)



Program Assessment

Fall 2009 and Spring 2010

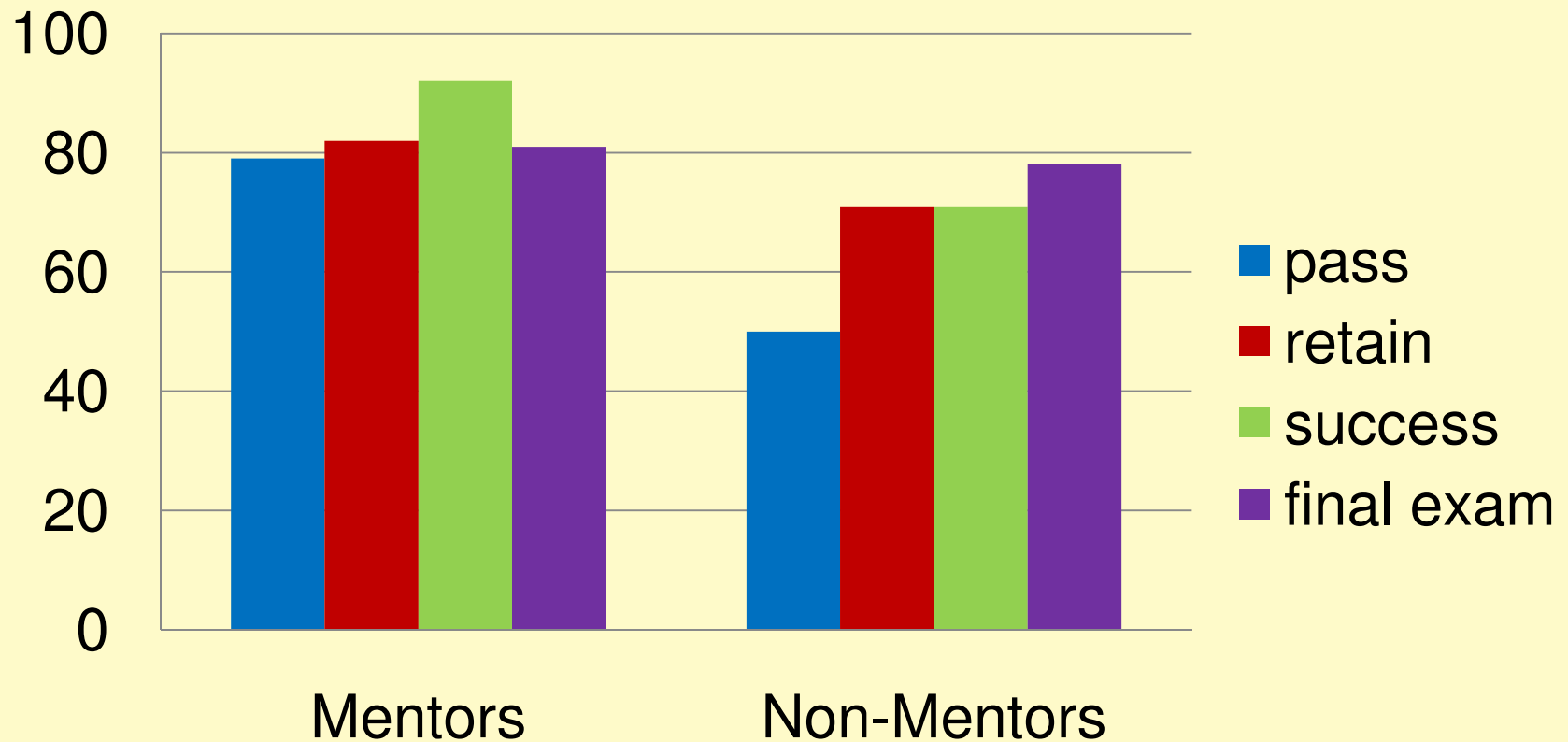
Comparison of pass rates, retention rates, success rates, and departmental final exam scores for classes with mentors vs. classes without mentors.

- ▣ **Pass** rate is defined as the number of students with a grade between an “A” and a “C-” divided by the number of students enrolled in the course.
- ▣ **Retention** rate is defined as the number of students enrolled that are not getting a “W” or “UW” grade divided by the number of students enrolled in the course.
- ▣ **Success** rate is defined as the number of students passing the course divided by the number of students retained in the course.

MAT 0800

Data Comparison, Fall 2009

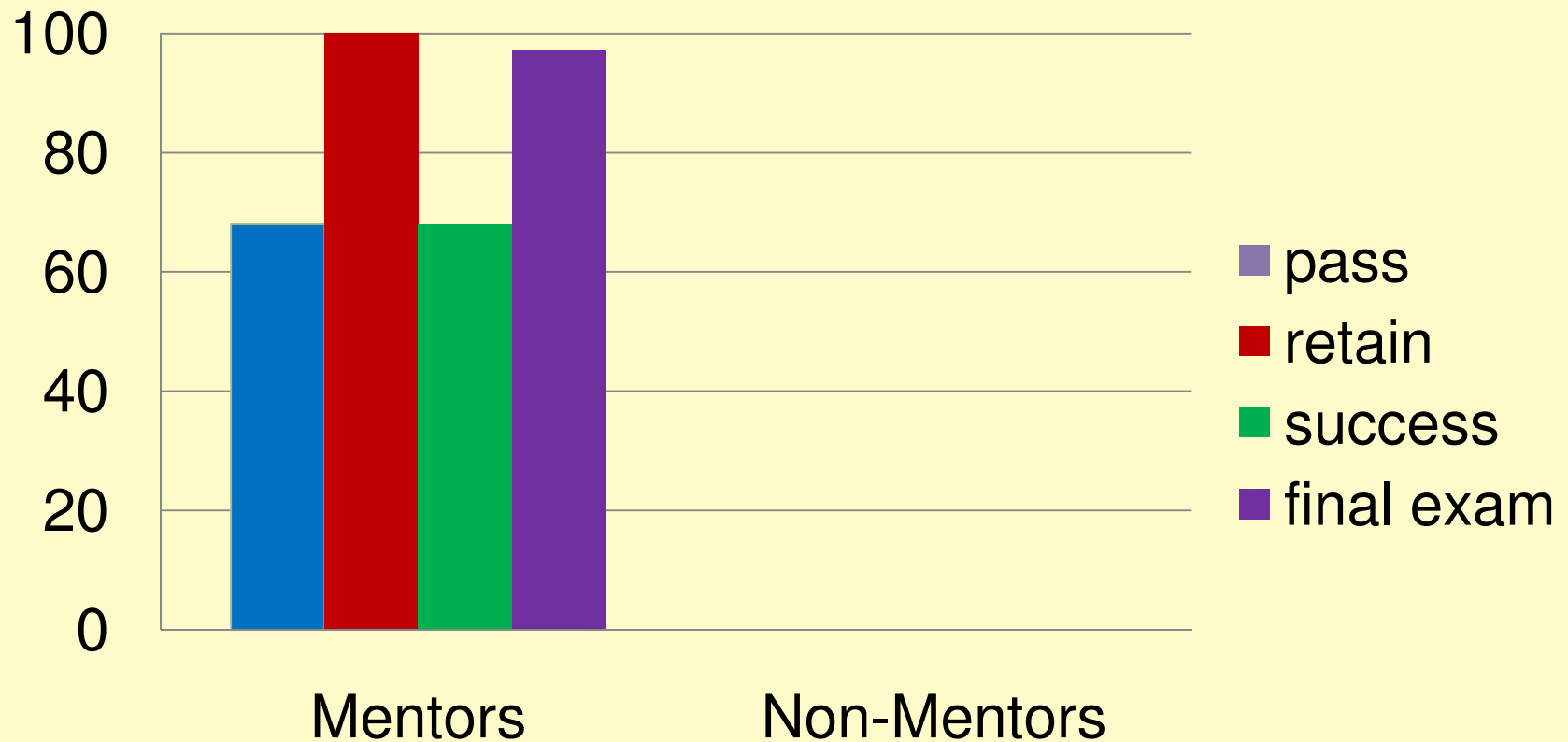
MAT 0800 Mentor vs. Non-Mentor Data



MAT 0800

Data Comparison, Spring 2010

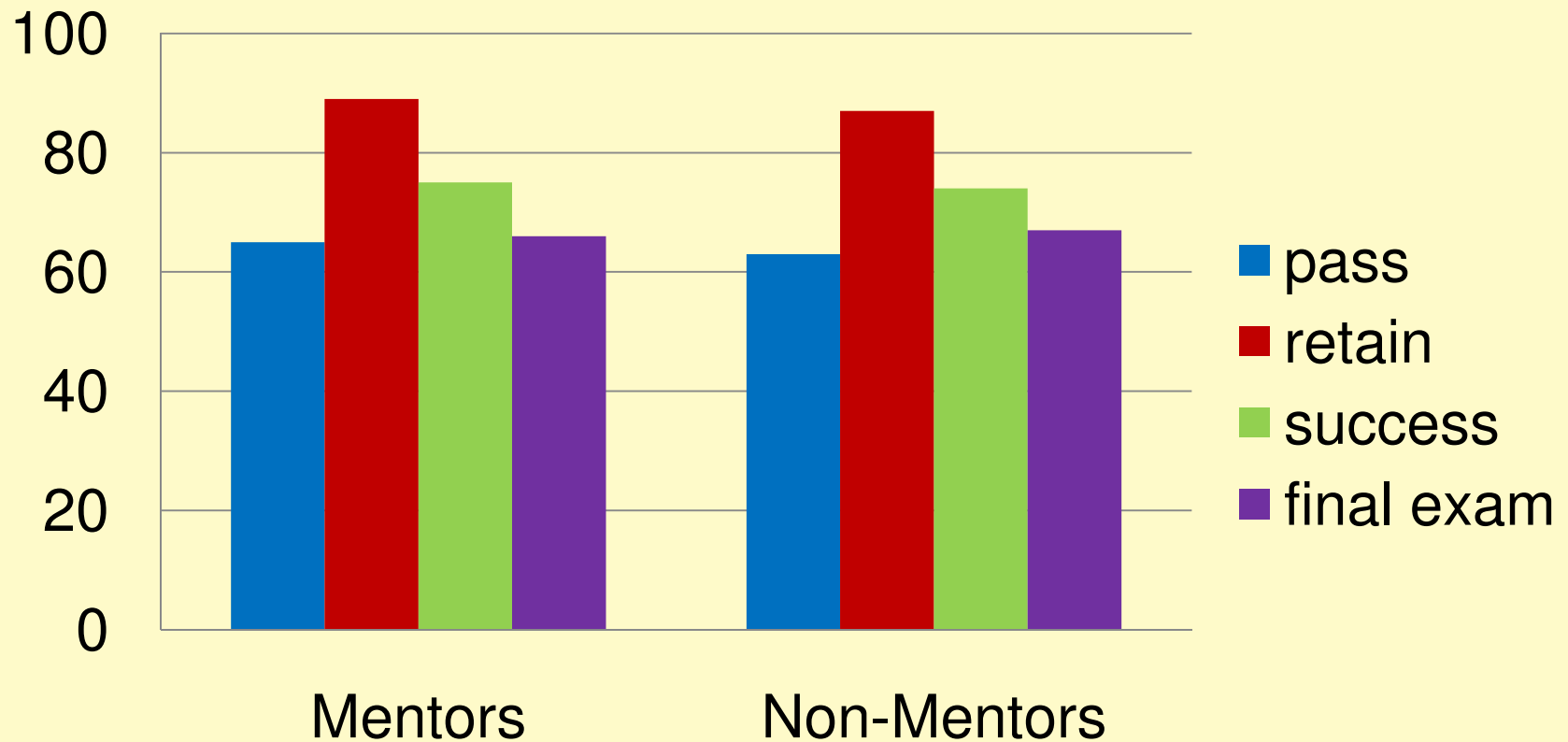
MAT 0800 Mentor vs. Non-Mentor Data



MAT 0950

Data Comparison, Fall 2009

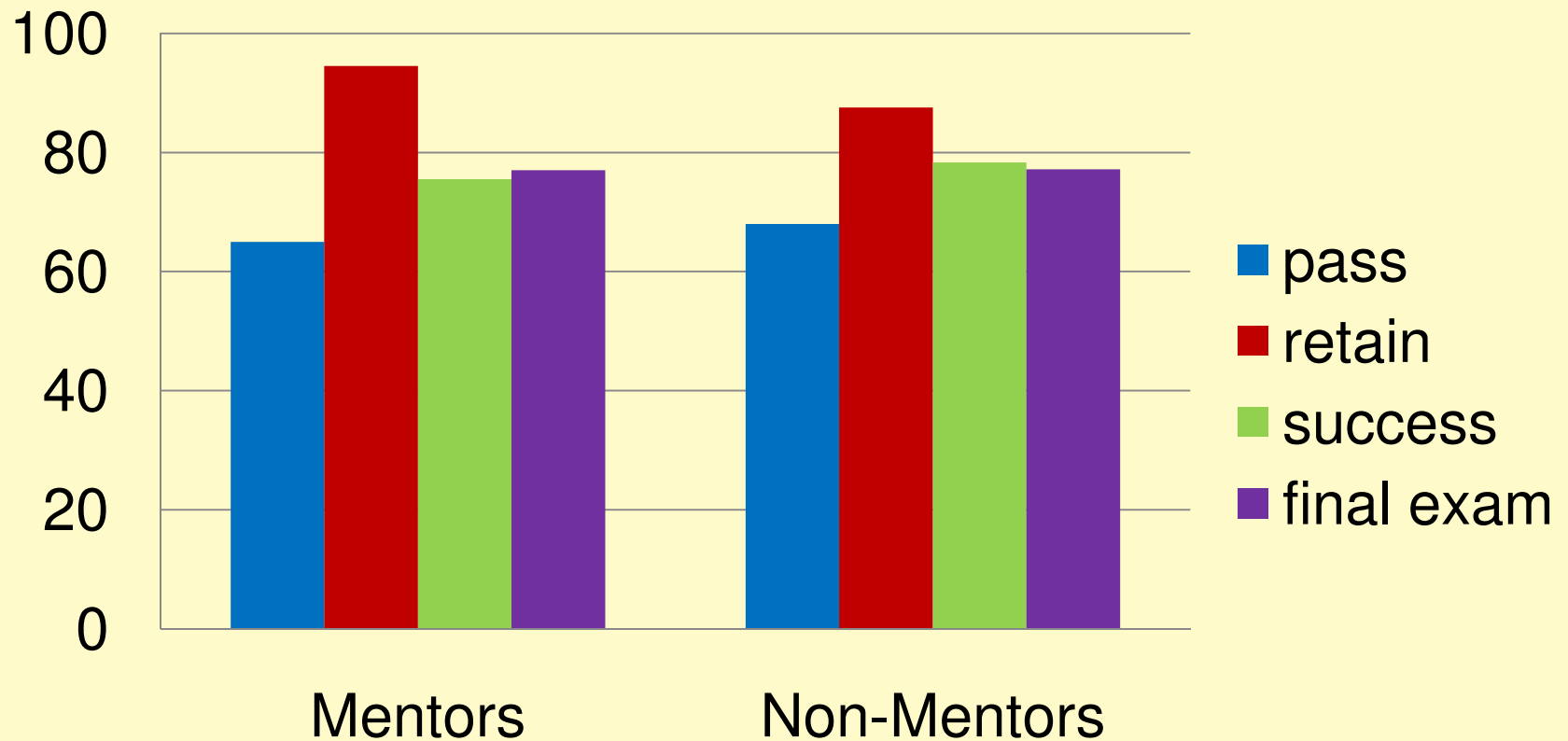
MAT 0950 Mentor vs. Non-Mentor Data



MAT 0950

Data Comparison, Spring 2010

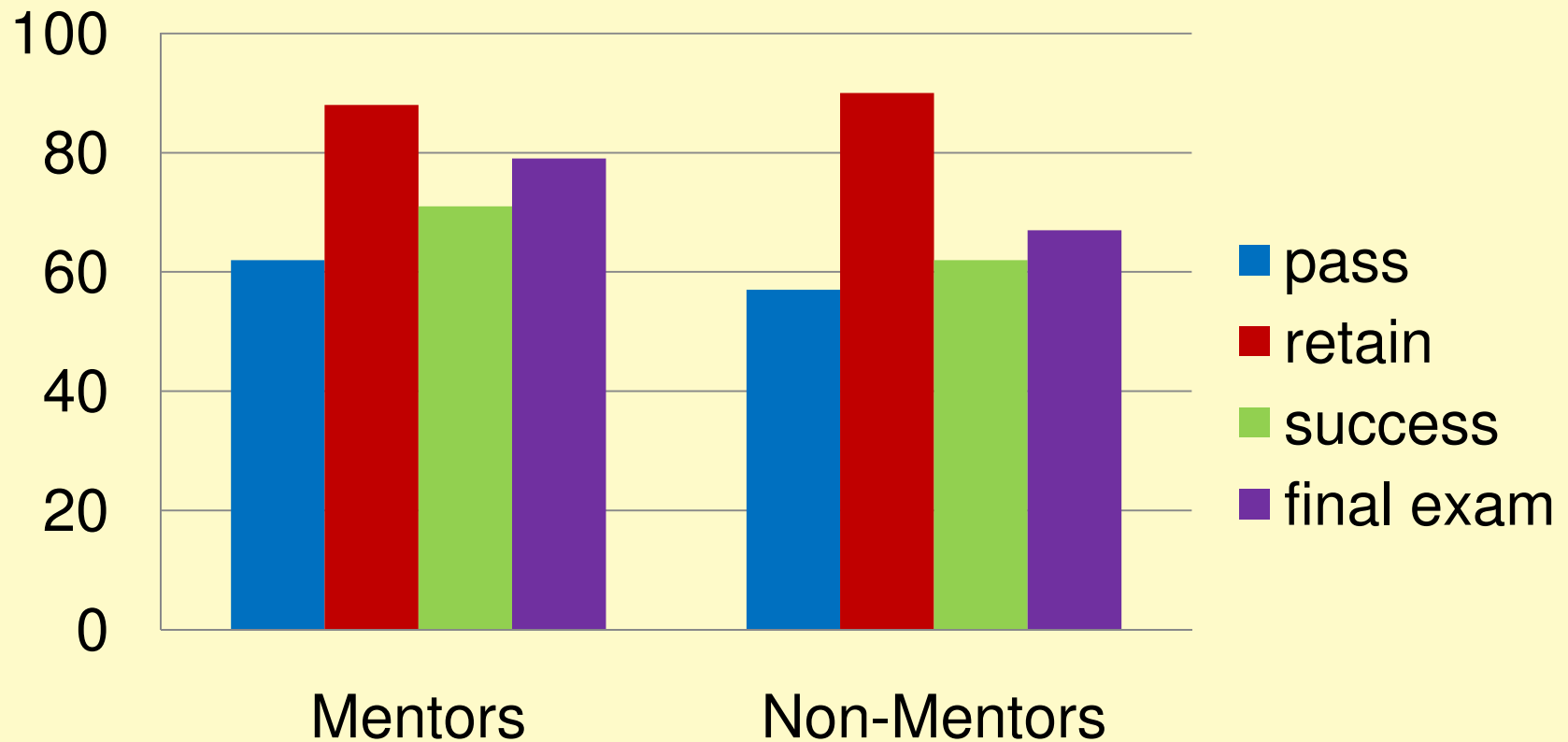
MAT 0950 Mentor vs. Non-Mentor Data



MAT 0980

Data Comparison, Fall 2009

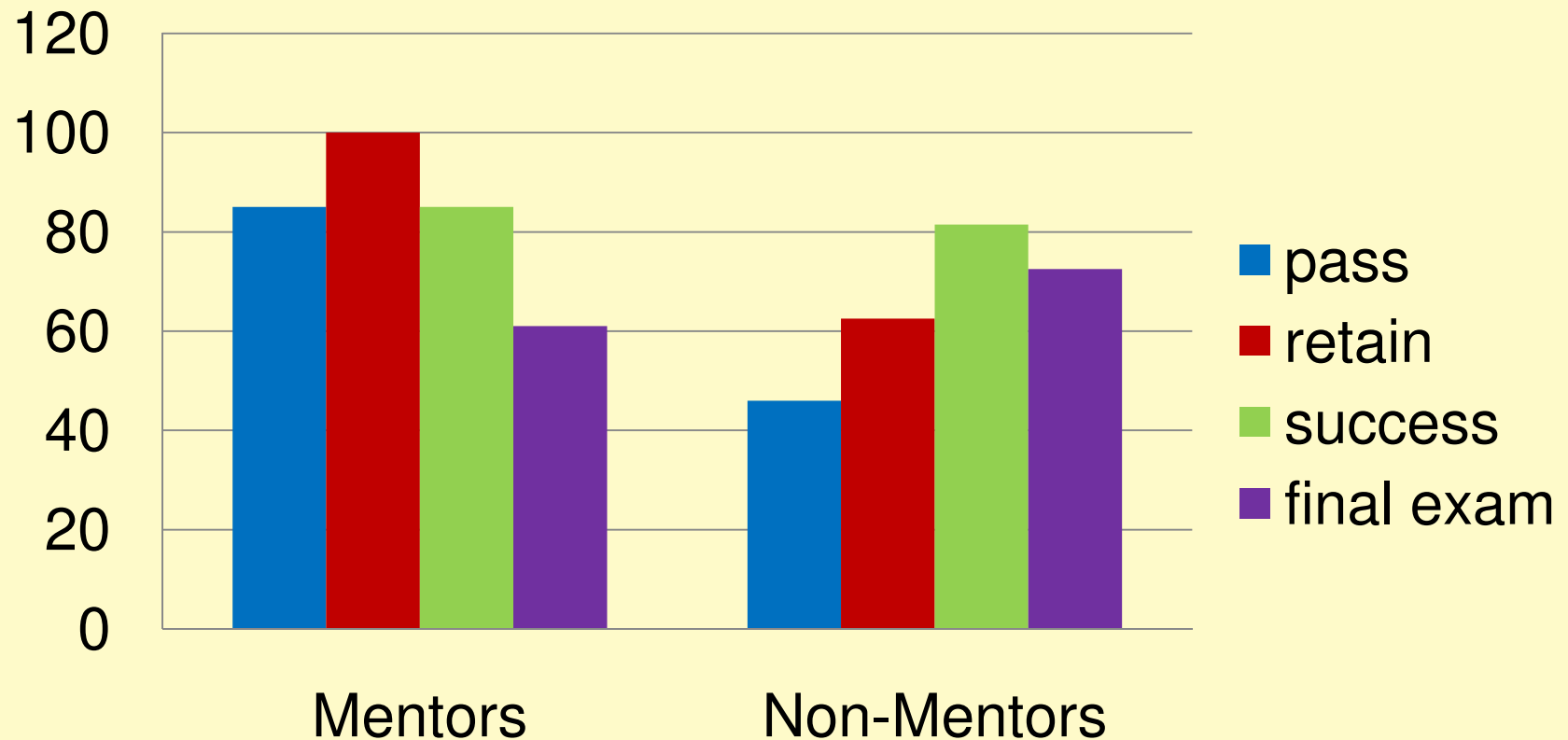
MAT 0980 Mentor vs. Non-Mentor Data



MAT 0980

Data Comparison, Spring 2010

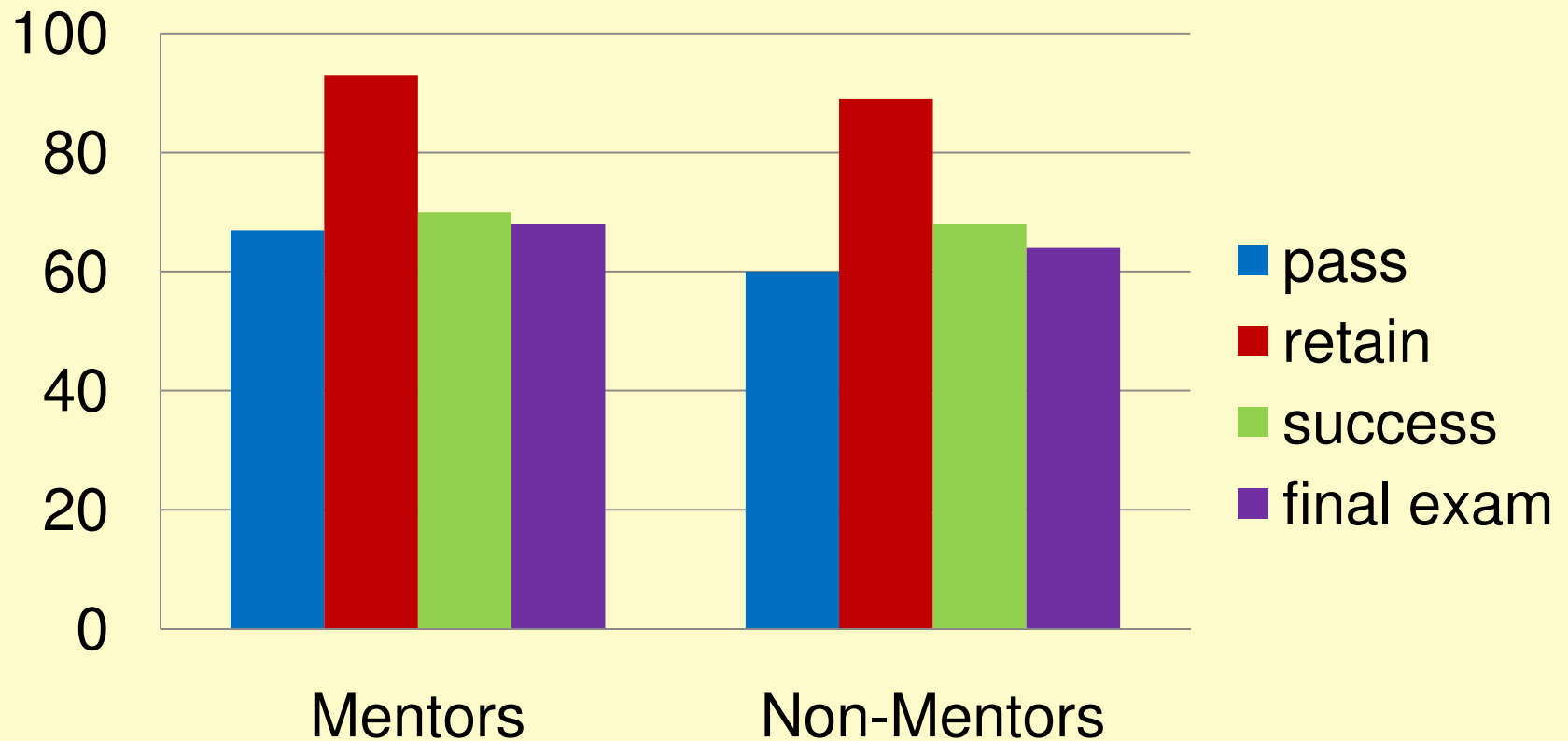
MAT 0980 Mentor vs. Non-Mentor Data



MAT 0990

Data Comparison, Fall 2009

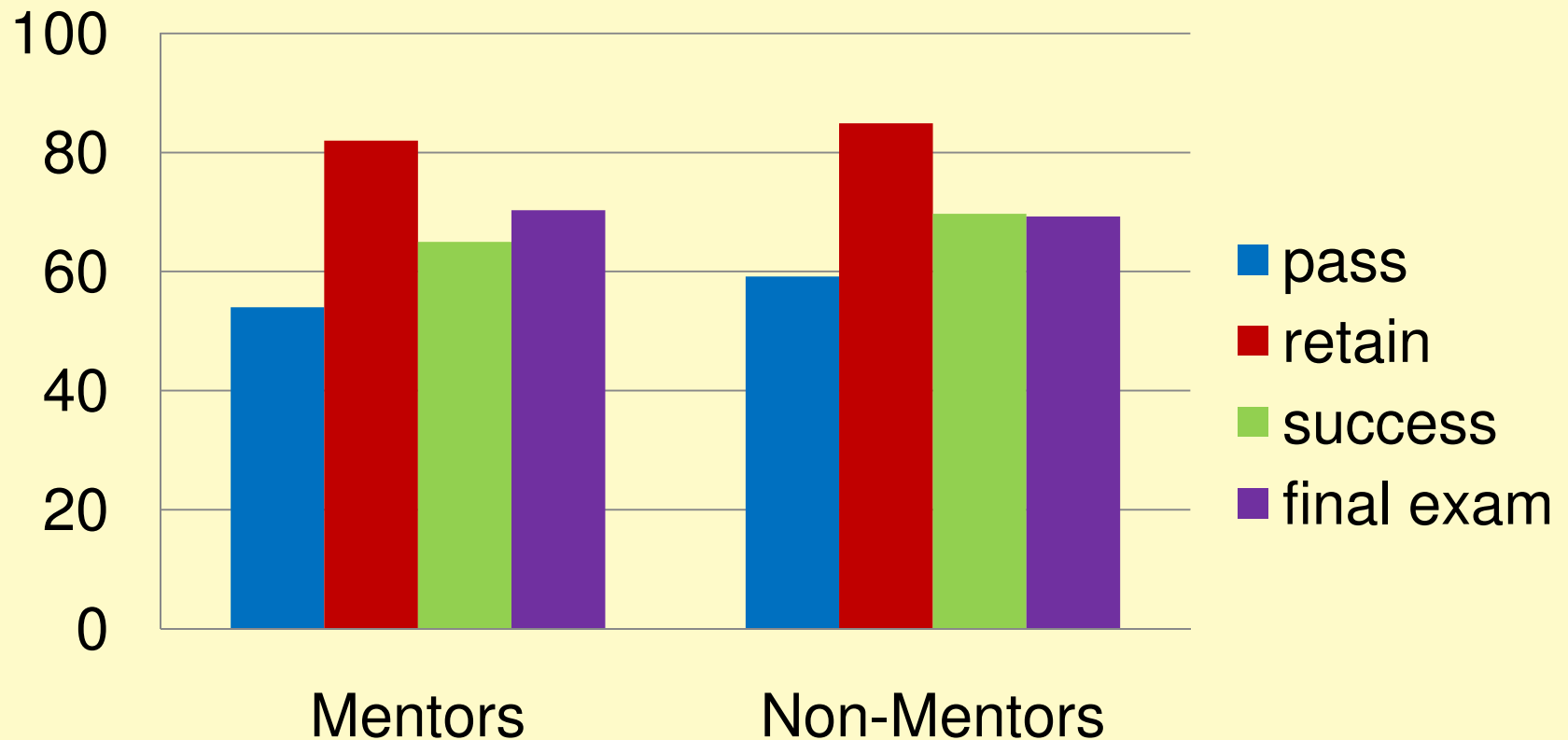
MAT 0990 Mentor vs. Non-Mentor Data



MAT 0990

Data Comparison, Spring 2010

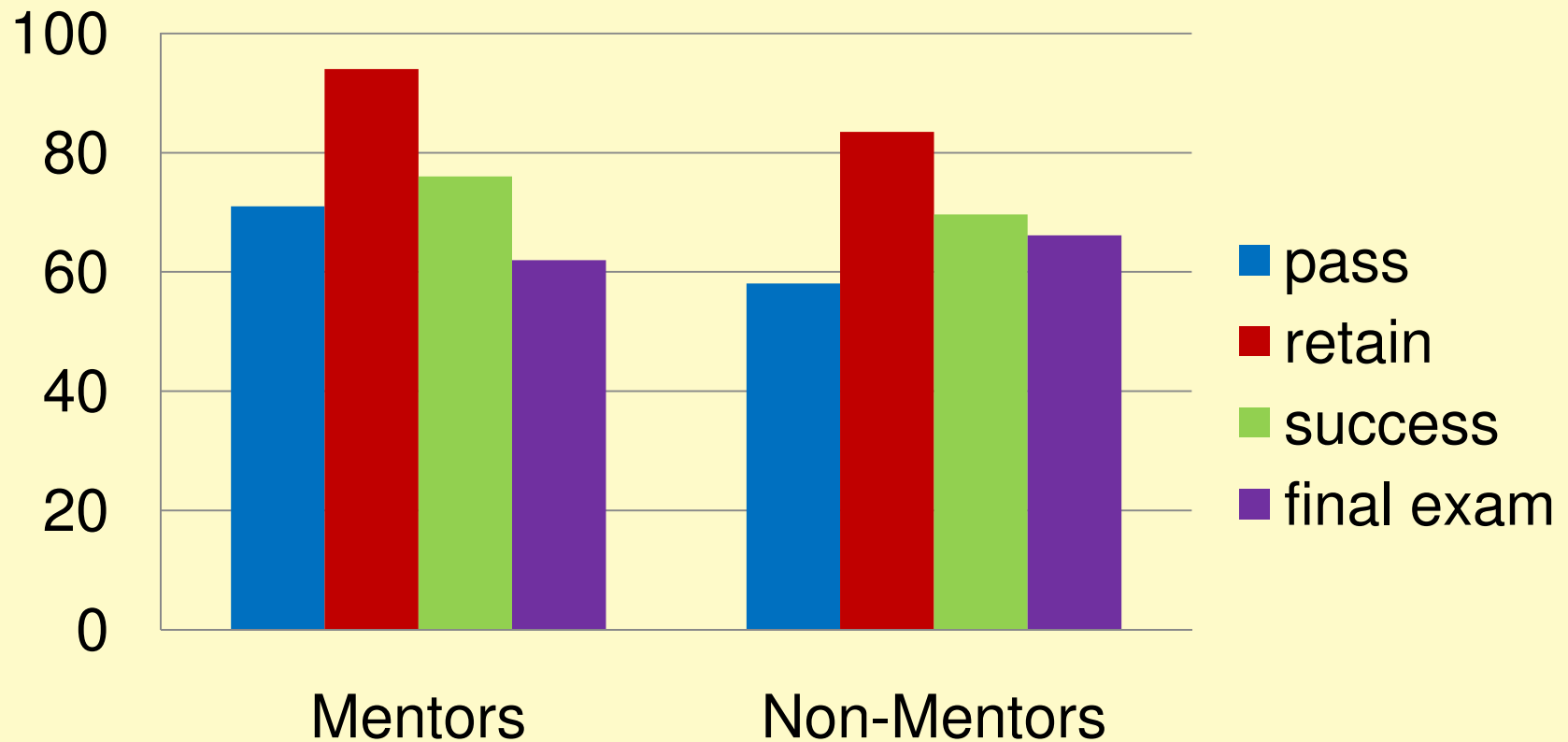
MAT 0990 Mentor vs. Non-Mentor Data



MAT 1000

Data Comparison, Spring 2010

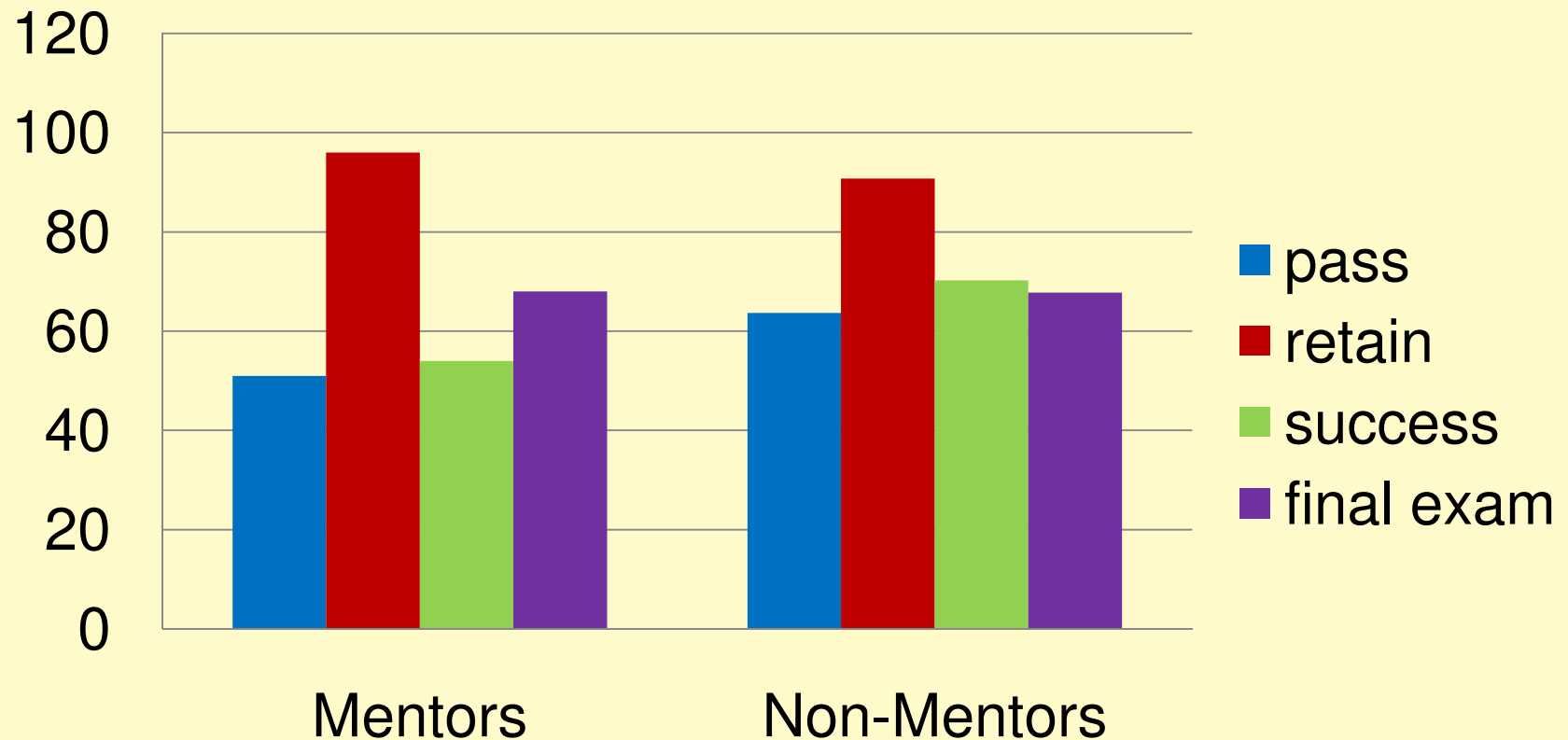
MAT 1000 Mentor vs. Non-Mentor Data



MAT 1010

Data Comparison, Spring 2010

MAT 1010 Mentor vs. Non-Mentor Data

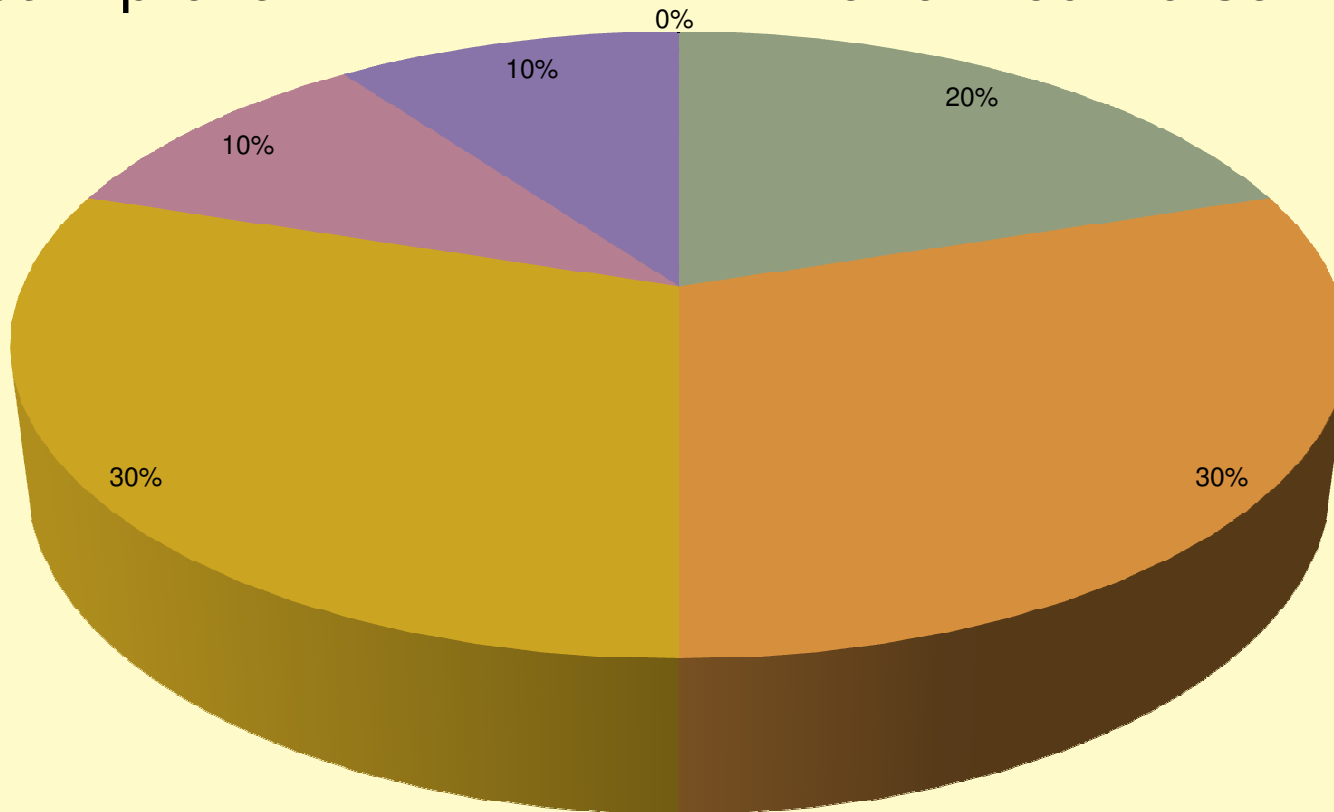


Mentored Class Grade (regularly met w/ mentors Fall 2009 and Spring 2010)

	sought out mentors / total	A	B	C	D	E
MAT 0800	41/60	18	11	4	2	6
MAT 0950	72/300	22	23	18	4	5
MAT 0980	7/21	1	3	1	1	1
MAT 0990	139/350	33	42	30	17	17
MAT 1000	18/30	6	7	3		2
MAT 1010	100/123	15	25	30	14	16

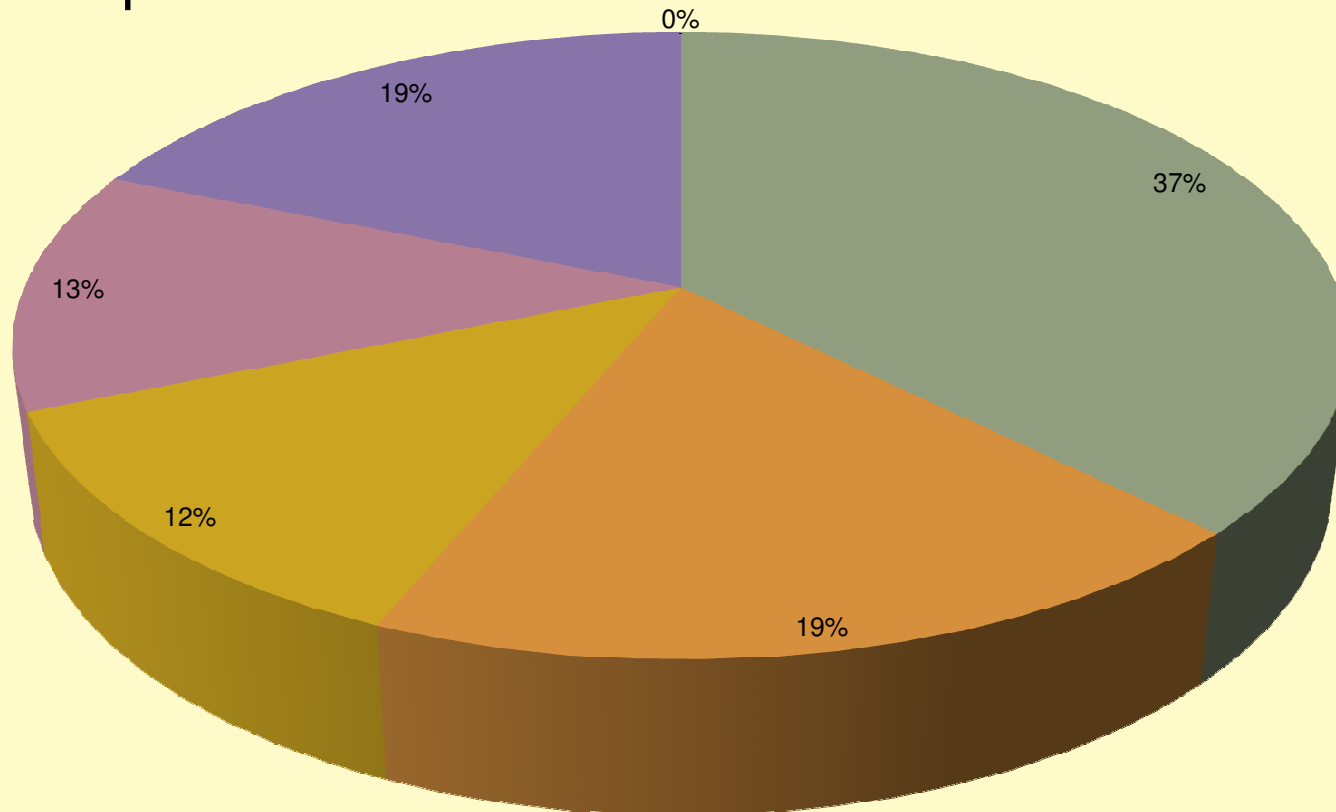
MAT 0950 Repeats with math mentor

- Improved one letter grade
- Improved two letter grades
- Improved three letter grades
- Improved four letter grades
- Did not improve
- Performed worse



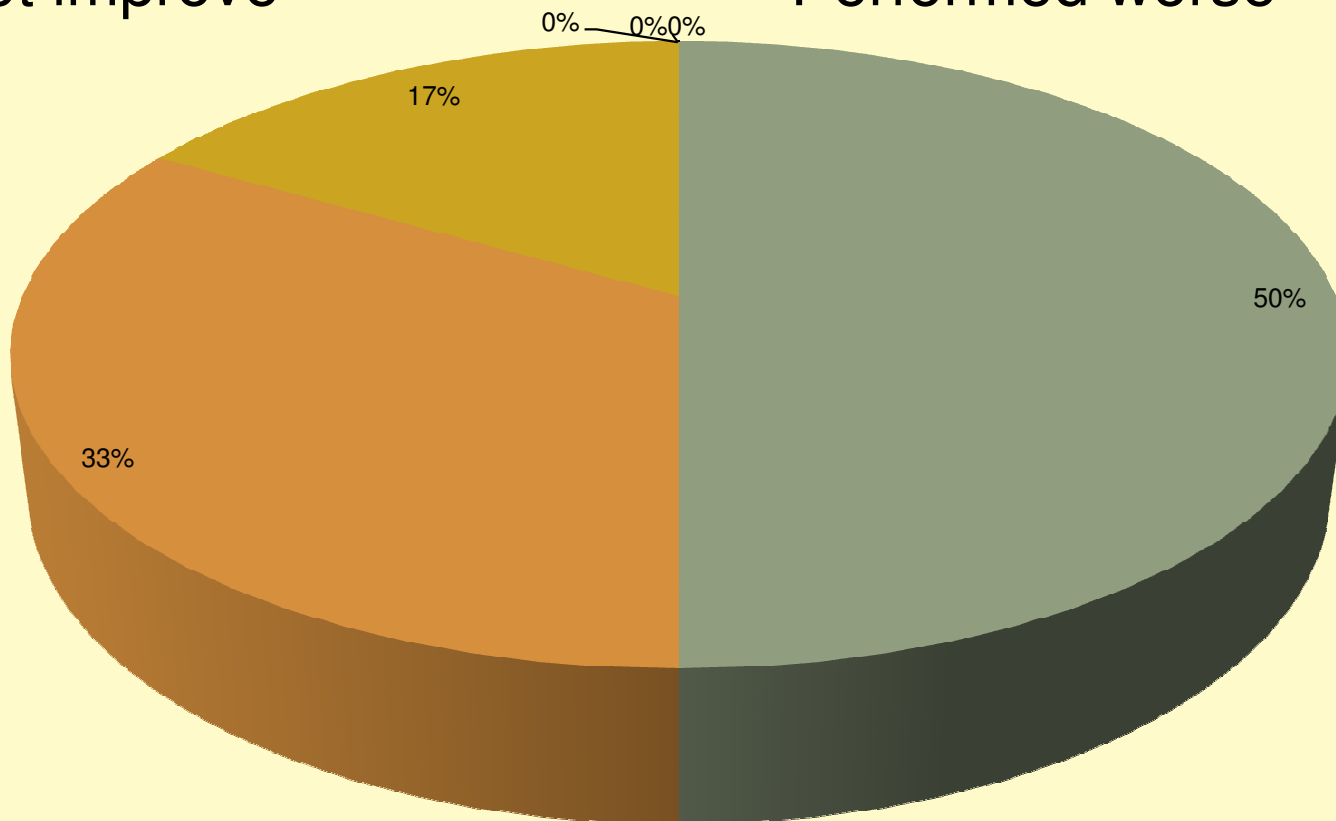
MAT 0990 Repeats with math mentor

- Improved one letter grade
- Improved two letter grades
- Improved three letter grades
- Improved four letter grades
- Did not improve
- Performed worse



MAT 1010 Repeats with math mentor

- Improved one letter grade
- Improved two letter grades
- Improved three letter grades
- Improved four letter grades
- Did not improve
- Performed worse



If completed next level, grade earned (for students who had worked with math mentors Fall 2009 and Spring 2010)

	A	B	C	D	E	W	UW
MAT 0950	5	4	4	5	3		1
MAT 0980	1						
MAT 0990	2	9	13	3	5	3	2
MAT 1000		2	2	3			
MAT 1010	9	18	17	10	9	1	2
MATH 1040						1	
MATH 1050	6	7	6		3		3

Program Assessment

Other factors presently under study:

- ▣ Cross-case analysis to search for similarities and differences across multiple cases of students who have worked with math mentors
- ▣ Mixed Method analysis: case studies of instructors, mentors, and students / more data on student success in current course, future courses, repeating students

Strategic Planning

Engaged Learning with Math Mentors

- ▣ Math mentors serving at Legacy High School helping pregnant teenage mothers pass their high school math courses

Grants pending...

- FIPSE Grant
 - ▣ Fund math mentoring program for the next 3 years
 - ▣ Develop math mentoring program to make it transferable to any CC, college, or university
- NSF Grant
 - ▣ Investigate possibilities of expanding math mentoring program to e-mentoring with developmental mathematics redesign courses, online courses, and hybrid courses.

Conclusion



Provide opportunities for peer mentoring among first-year students

Mentor involvement encourages students to create learning communities where they can establish interpersonal relationships and increase their own sense of self-efficacy as a college student.

Conclusion

Encourage partnerships between departments and organizations on campus to identify and respond to student needs.

Faculty at UVU are discovering that a more focused effort to identify and respond to specific needs within specific groups of first year students seems to lead to better retention of first year students.

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QUESTIONS AND ANSWERS