



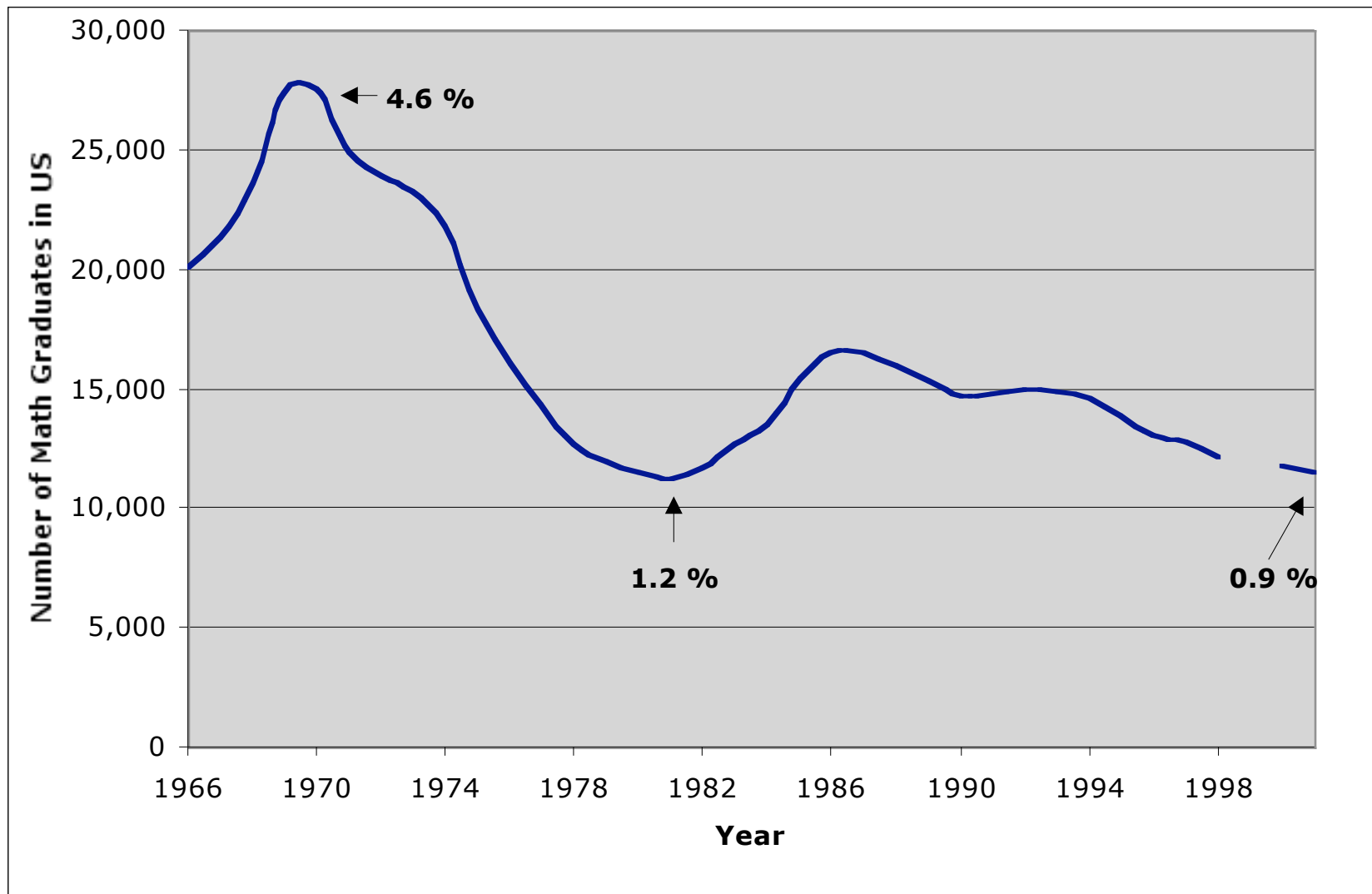
Attracting and Retaining Math Majors

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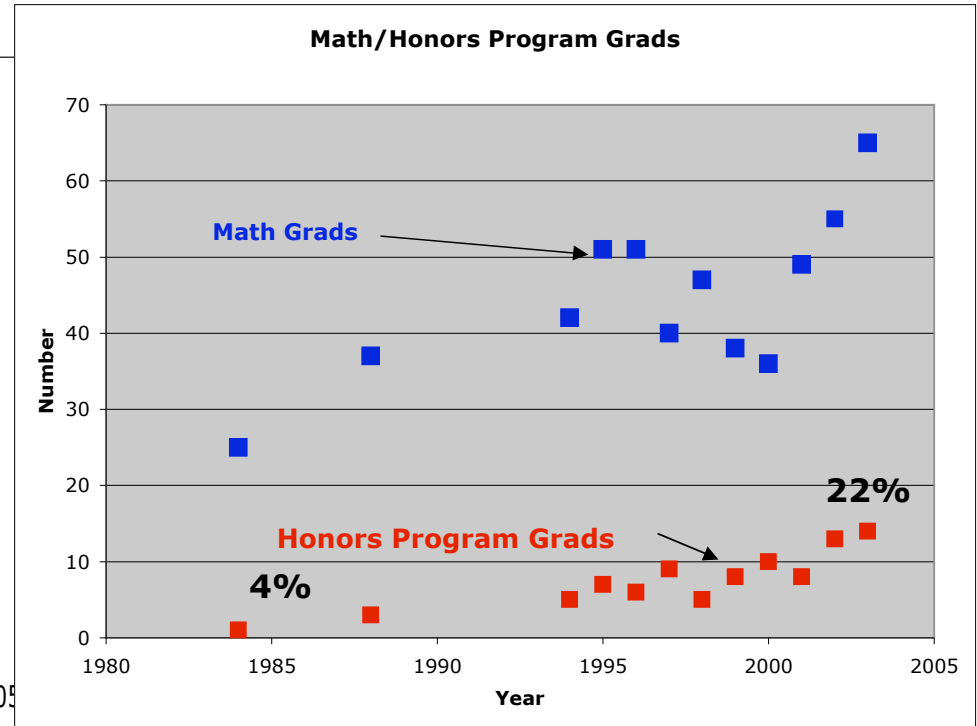
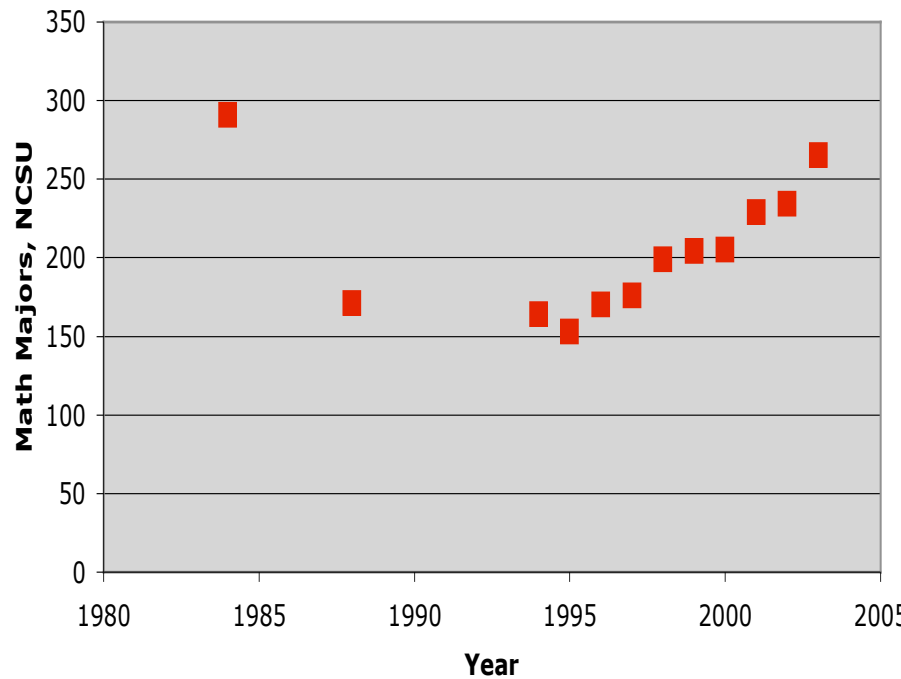


The Problem





NC State Data





What Changed?

(in the Math Program)

- Key decisions in the middle 1980's
 - Raised the admission requirements
 - Created a “bridge” class
- Gradual changes in other areas
 - Teaching
 - Advising
 - Extracurricular



Key Factors in Attracting and Retaining Math Majors

- Good teaching
 - Calculus & “bridge” classes (attracting)
 - Upper level required courses (retaining)
- Small classes
 - “bridge” class, upper level classes
- Good advising
 - Academic, including placement & Plan of Study
 - Career advising
- Flexible major
 - Math electives chosen to boost career choice
 - Makes a good second major



Other Factors

- Diverse faculty
- Math Competitions
- Math Club



AND!

Math Honors Program



Math Honors Program

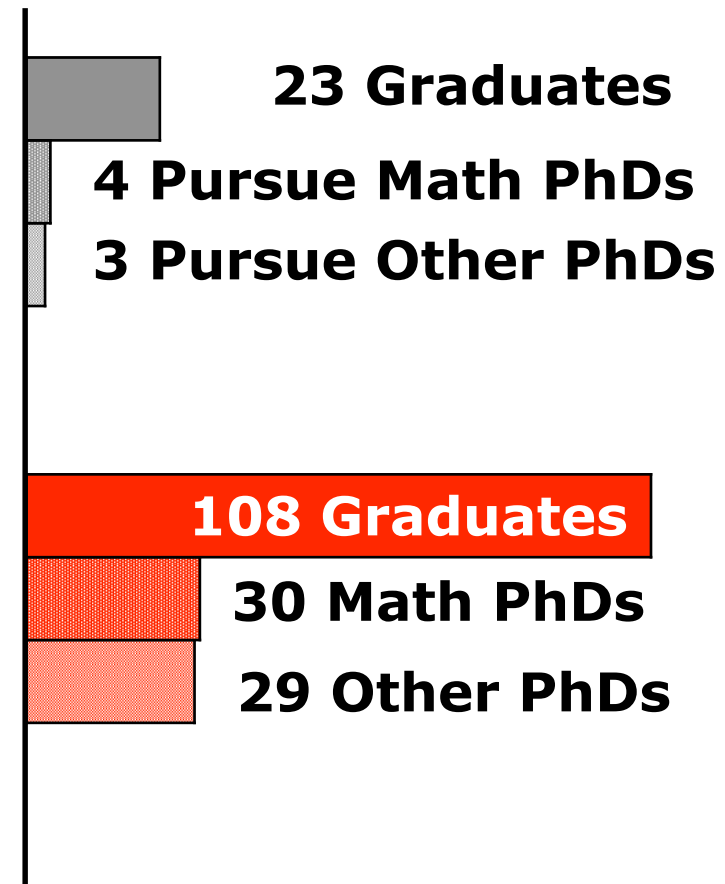
- Founded in 1960's to
 - Challenge our best students
 - Prepare them for graduate study or rewarding post-graduate work
- Some gains from 1980 - 1990
- Dramatic success in the past 12 - 14 years

What Changed?



Evolution of the NC State Honors Program

- 1980's: figuring out how to identify, recruit and advise students
- 1990's-present: an aggressive advising system that guides talented students to opportunities inside and outside the university





Identification



- Choose your target
(e.g. grad school-capable students)
- Identification classes
 - Look for strong performers in early proof-based classes
 - Talented or interested students need to take these classes ASAP
- Entering freshmen
 - Identify very advanced freshmen
 - Coordinate with Admissions
 - Advertise and make yourselves available!



Recruitment



Two things the students must hear

- “The Honors Program is exciting, challenging, and will open doors for you!”
 - Honors classes
 - Research
 - Summer Programs and Study Abroad
 - Post-graduate Opportunities
- “The Honors Program will work for you!”
 - Sit with the student and build a plan-of-study incorporating all of his/her educational goals



NC State's Math Honors Program Requirements

- Admission
 - 3.5 GPA in math and overall
 - Recommendation of identification class professor
- Graduation
 - 2nd semester of analysis
 - Three graduate math courses
 - Research/Independent Study Project
- Our students leave ready for grad school



The Program's Core: Advising

- Long-term personalized relationship
- Continuing monitoring and support
 - At least one serious conversation per term
- Covers all of undergraduate career and constantly presents opportunities
 - Academics, math and otherwise
 - Research, summer, and study abroad
- Includes post-graduate planning
 - Graduate school and fellowships
 - Jobs beyond math and academia



How do I Build an Honors Program?

- Identify enthusiastic faculty
- Select leadership
- Build a committee of advisors
- Establish
 - Faculty responsibilities
 - Student requirements
- Coordinate with university





Faculty Roles

Program

Leadership

- Build Faculty Awareness
- Coordinate Advisors
- Find Opportunities
- University Liaison

Advisors

- Enthusiastic
- Recruit
- Guide
- Encourage

Everyone

- Identification
- Research Supervision
- Recommendation Letters

What's the payoff?

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Math Grad Schools

- 1980's

Berkeley

Indiana

Rutgers

VPI

- 1990's - present

Princeton

Berkeley

Cambridge, UK

Stanford

NYU

UCLA

Wisconsin

Cornell

Maryland

Rutgers

Urbana-Champaign

Penn

UT Austin

Northwestern

Ohio State

Duke

Penn State

UNC

NC State

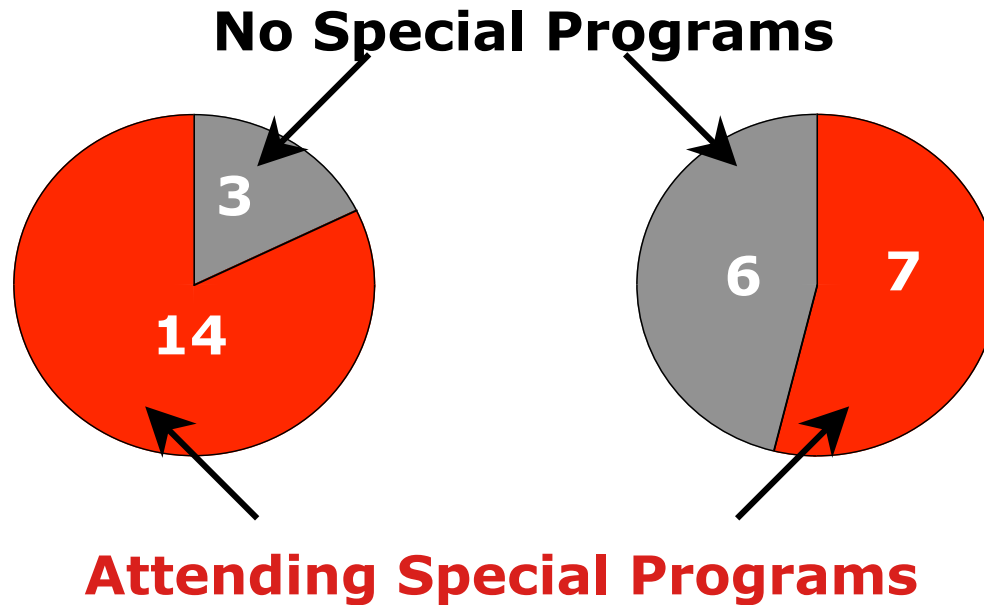
Tennessee



Impact of Special Programs

NCSU students attending REUs, Budapest, etc. pursued PhDs at more prestigious schools.

- Princeton
- Berkeley
- Cambridge, UK
- Stanford
- NYU
- UCLA
- Wisconsin
- Cornell
- Maryland
- Rutgers



- Urbana-Champaign
- Penn
- UT-Austin
- U Washington
- Northwestern
- Ohio State
- Duke
- Penn State
- UNC
- NC State
- Tennessee

*Data Since 1990

Your honors program can channel students to these opportunities!



And that's not all!

- 5 NSF's for 2nd majors
- 3 DoD Fellowships
- 2 Gates Fellowships
- 1 Fulbright
- 1 Ford Fellowship
- 5 Goldwater Scholarships



Key Points

- Bright students are much more likely to reach their potential when
 - skillfully guided
 - presented with challenging opportunities
 - encouraged and supported
- Faculty efforts have maximum effect when strategically coordinated
- An Honors Program is a great way to achieve these goals



So How Does This Work for Your Department?

Overall Honors Program strategies of:

- Long-term personalized relationship
- Continuing monitoring and support
- Planning the undergraduate career and presenting opportunities
- Post-graduate planning

Can have a huge impact on every student and
will grow your department