



# COPE CONFERENCE THEME:

## THE ECONOMY AND ECONOMICS AFTER THE CRISIS

- This economic crisis is different
- This recovery will be different
- Some jobs are permanently destroyed
- Consequently recovery will require restructuring

THE GENDER GAP  
IN  
“STEM” EDUCATION

SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS

Presentation

by

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to the

Congress of Political Economists, International

Honolulu

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# Overarching, cross-national themes:

- Economic recovery will require re-structuring
- Re-structuring will require workers prepared for jobs in the new knowledge-based economy
- Competitive advantage will require STEM professionals, proficient in Science, Technology, Engineering, and Mathematics
- What is the role of government in developing STEM professionals ???

# SIGNIFICANCE OF STEM PROFESSIONALS

- Source of competitiveness in the global economy
- But nations face shortages in STEM professionals
- The most successful nations will be those that succeed in educating more women to be STEM professionals
- New policy information required:  
STEM degrees awarded, by gender

# Definition of STEM

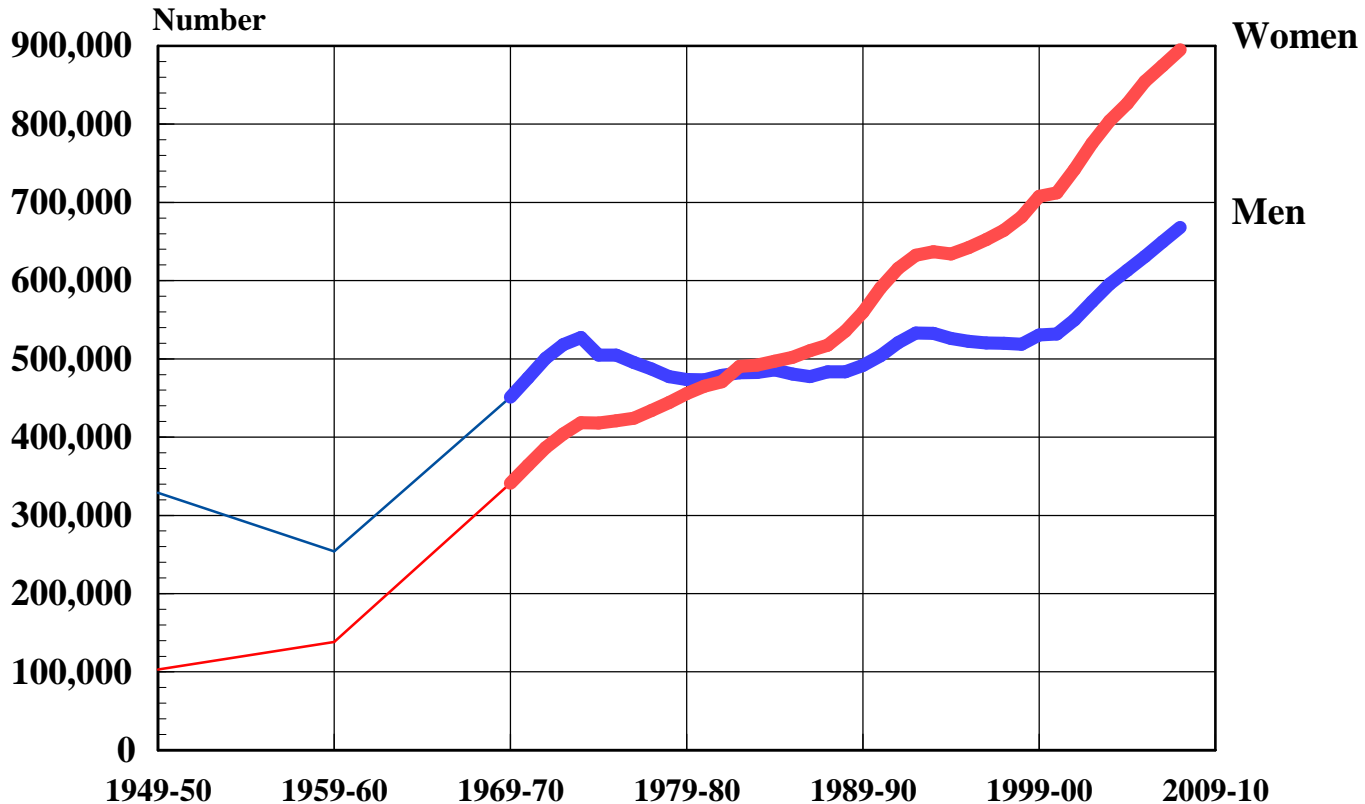
- Department of Education definition:
  - Sciences
    - Physical and natural sciences
    - Biology
  - Technology
    - Engineering and engineering technology
    - Mathematics and statistics
- National Science Foundation definition:
  - Adds psychology and economics

# EXAMPLES OF STEM DATA USEFUL FOR POLICY DEVELOPMENT:

- Trends in the number of degrees awarded
- Trends in the number of degrees awarded, by gender
- Trends in share of degrees awarded, by gender

**DEGREES AWARDED**  
**BACHELOR'S DEGREES**  
**BY GENDER**

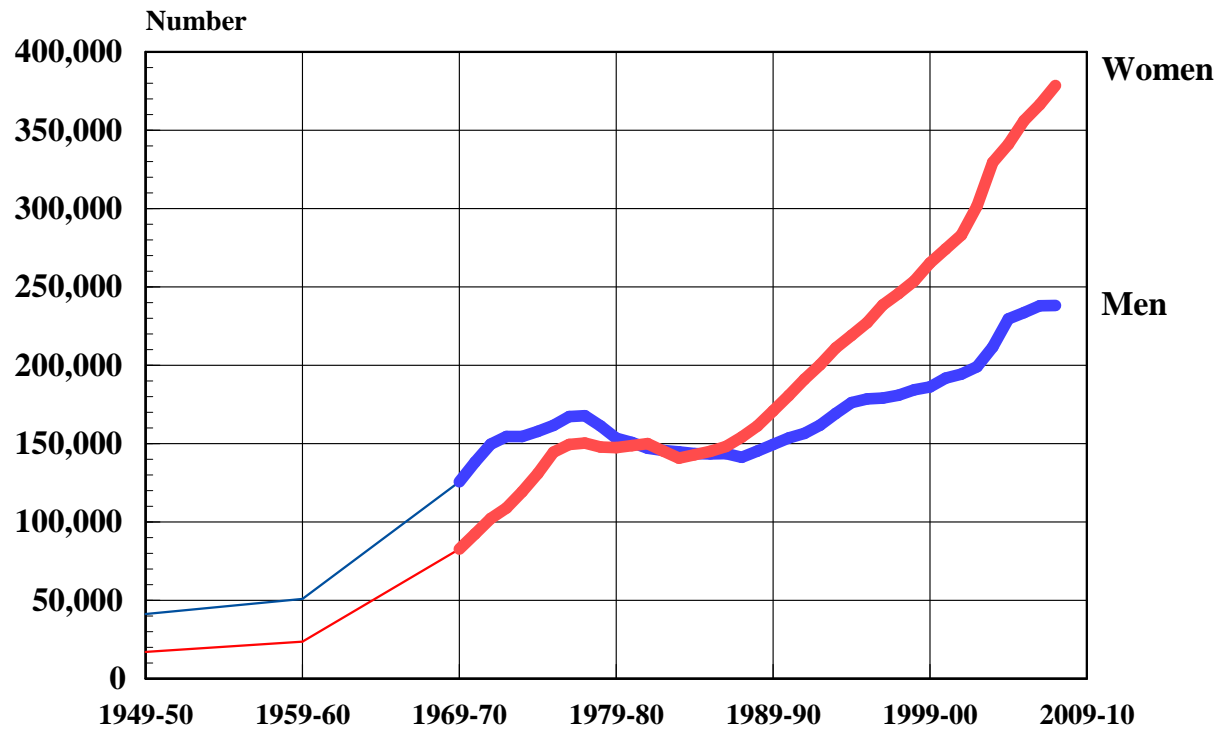
**1949-50 to 2007-08**



Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 268.



**DEGREES AWARDED**  
**MASTER'S DEGREES**  
**BY GENDER**  
**1949-50 to 2007-08**

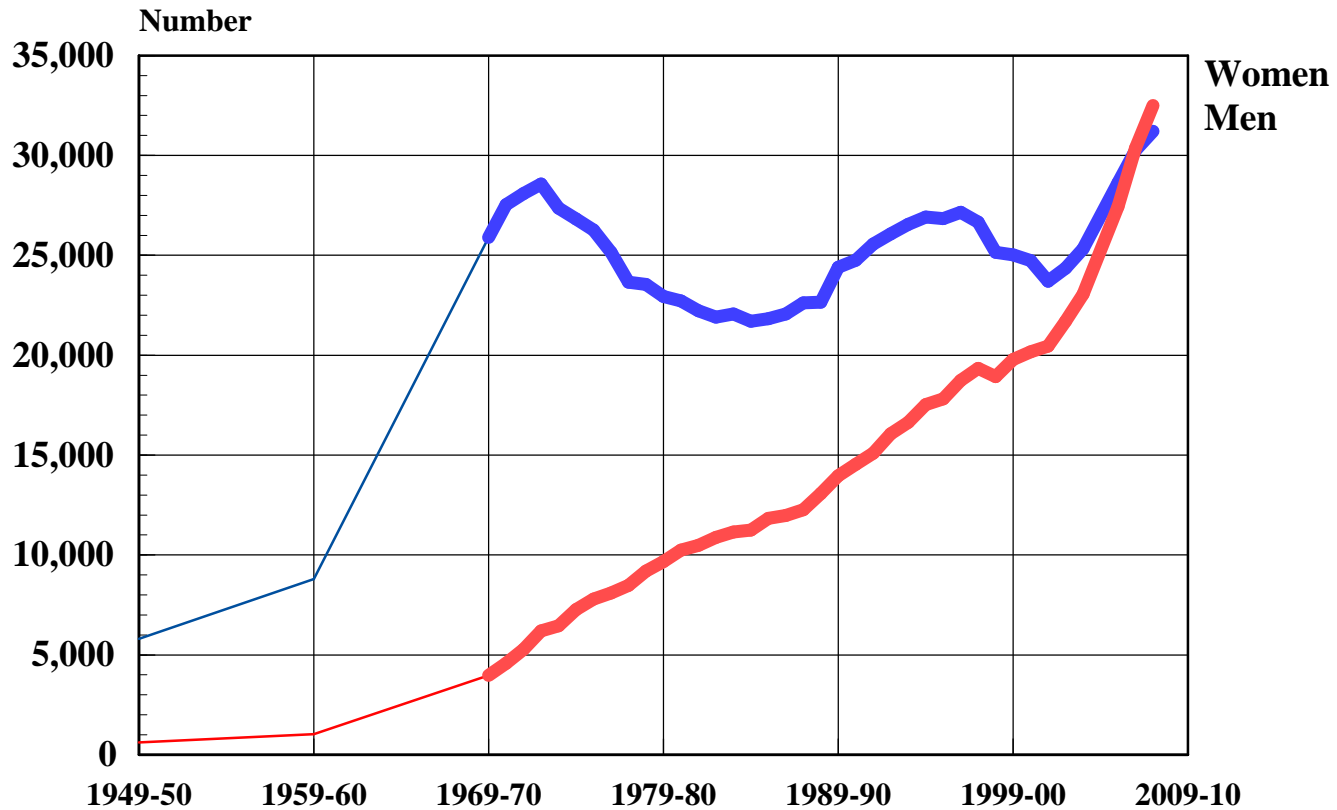


Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 268.

**DEGREES AWARDED**  
**DOCTOR'S DEGREES**

**BY GENDER**

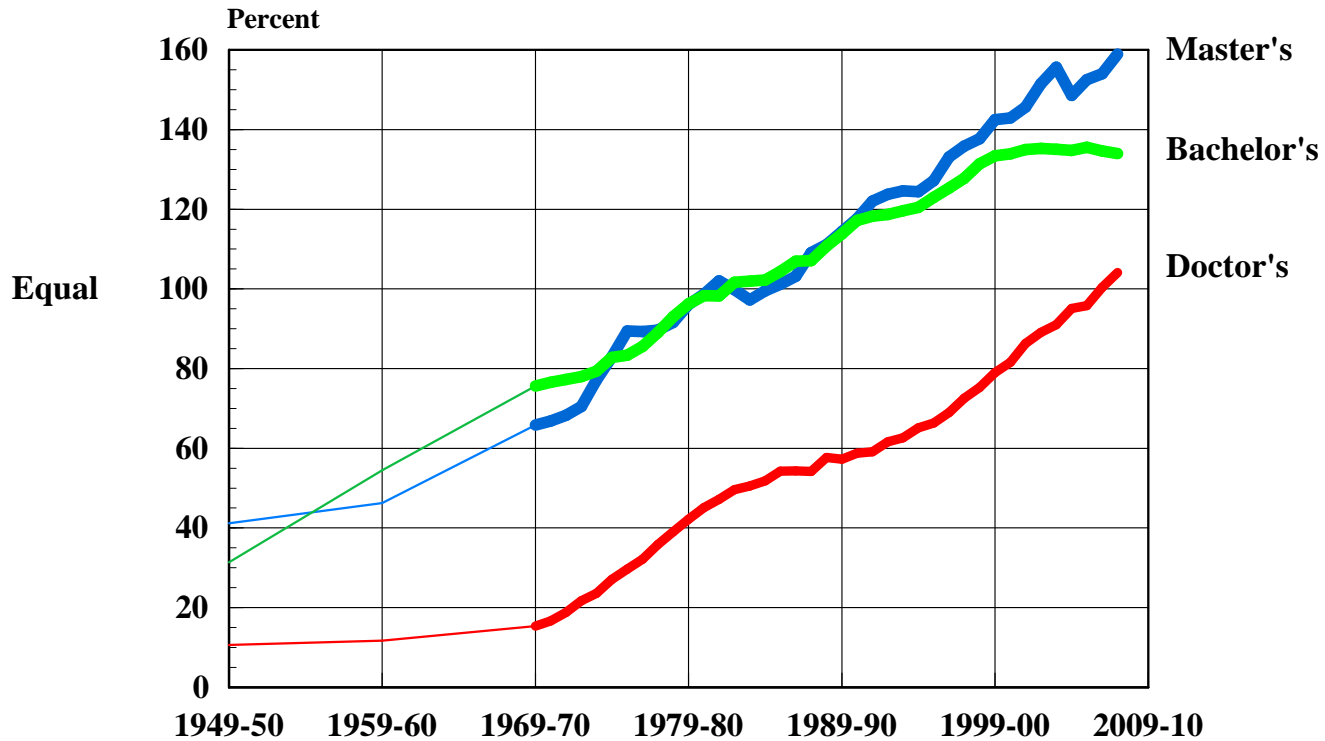
**1949-50 to 2007-08**



Source: U.S. Department of Education, Digest of Education Statistics: 2009,  
Table 268.

**PERCENTAGE OF ALL DEGREES  
BACHELOR'S, MASTER'S AND DOCTOR'S  
AWARDED TO WOMEN**

**1949-50 to 2007-08**

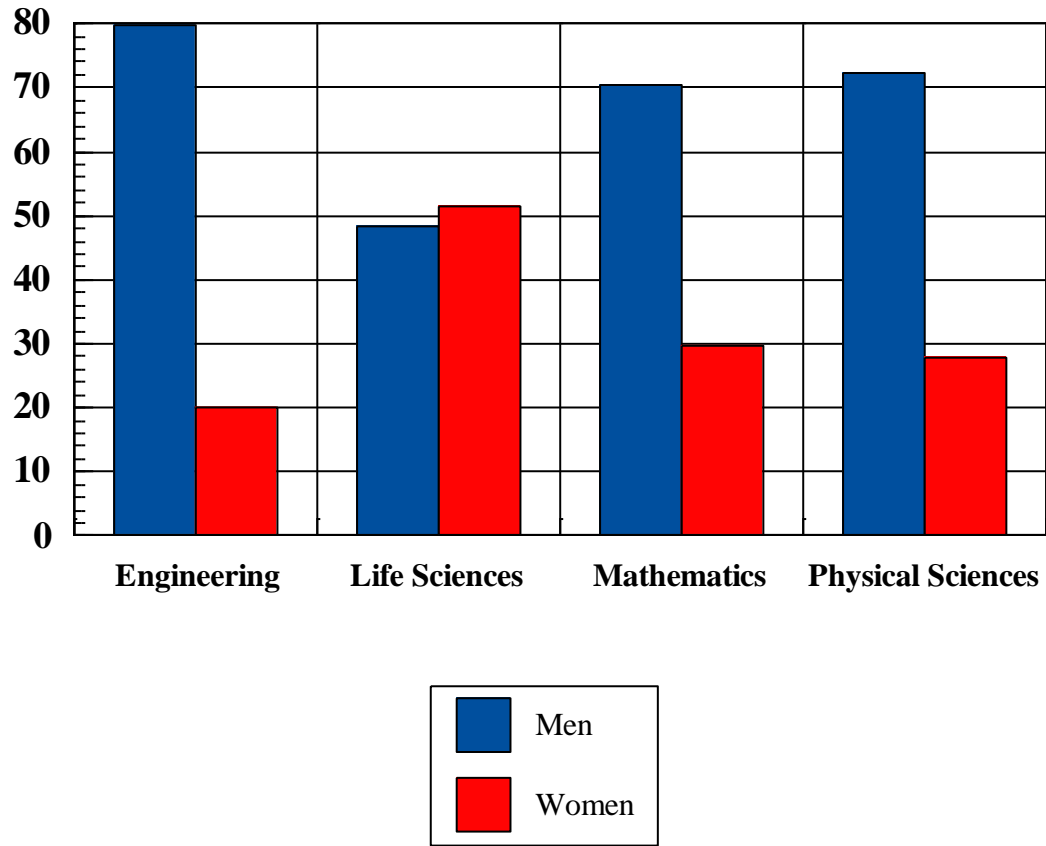


Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 268

# STEM FIELDS:

## PERCENTAGE OF DOCTOR'S DEGREES AWARDED BY FIELD OF STUDY

BY GENDER  
2005-06

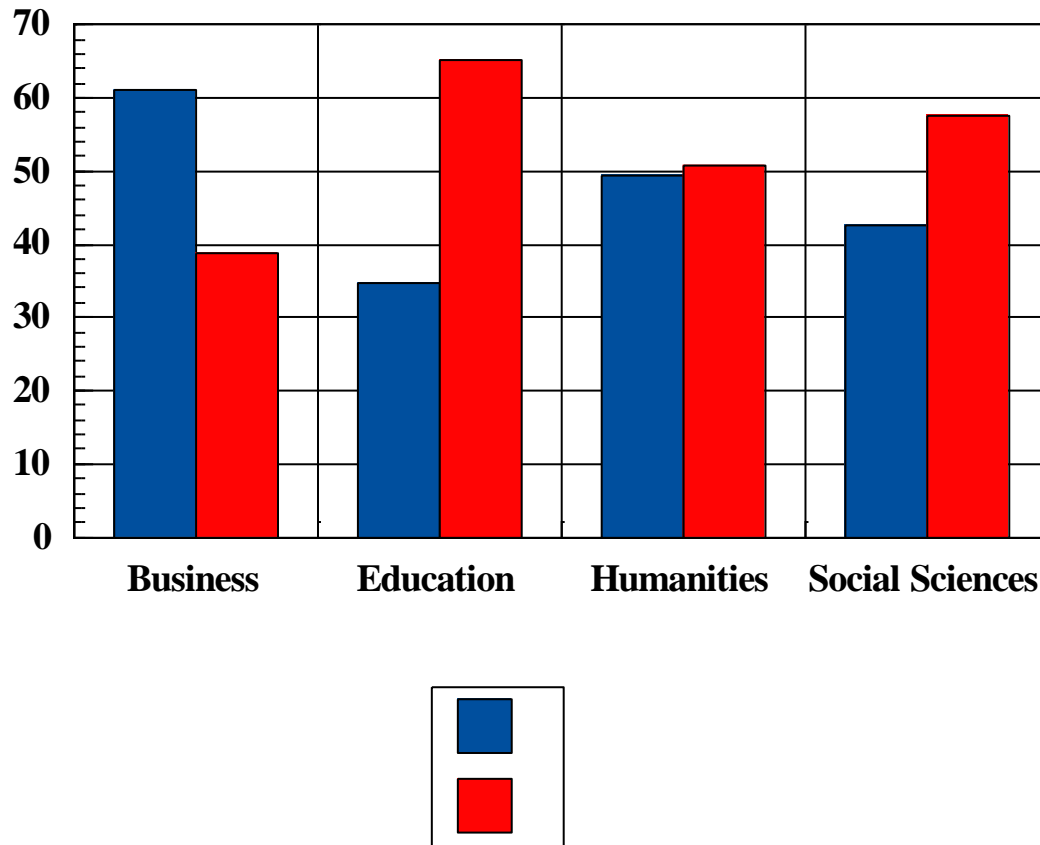


Source: U.S. Department of Education, Digest of Education Statistics: 2009.  
Table 320.

# OTHER THAN STEM FIELDS:

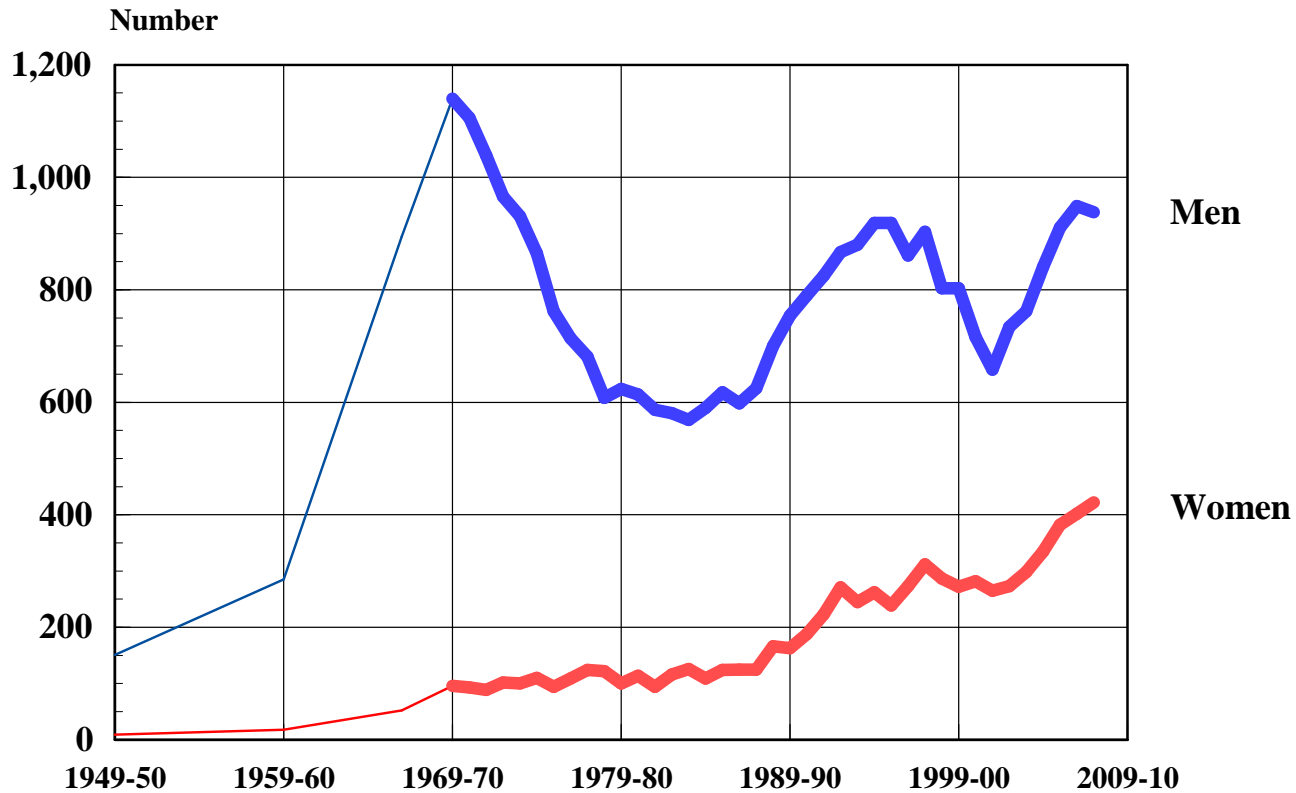
## PERCENTAGE OF DOCTOR'S DEGREES AWARDED BY FIELD OF STUDY

BY GENDER  
2005-06



Source: U.S. Department of Education, Digest of Education Statistics: 2009,  
Table 320.

**DOCTORATE DEGREES AWARDED, BY FIELD**  
**MATHEMATICS**  
**BY GENDER**  
**1949-50 to 2007-08**

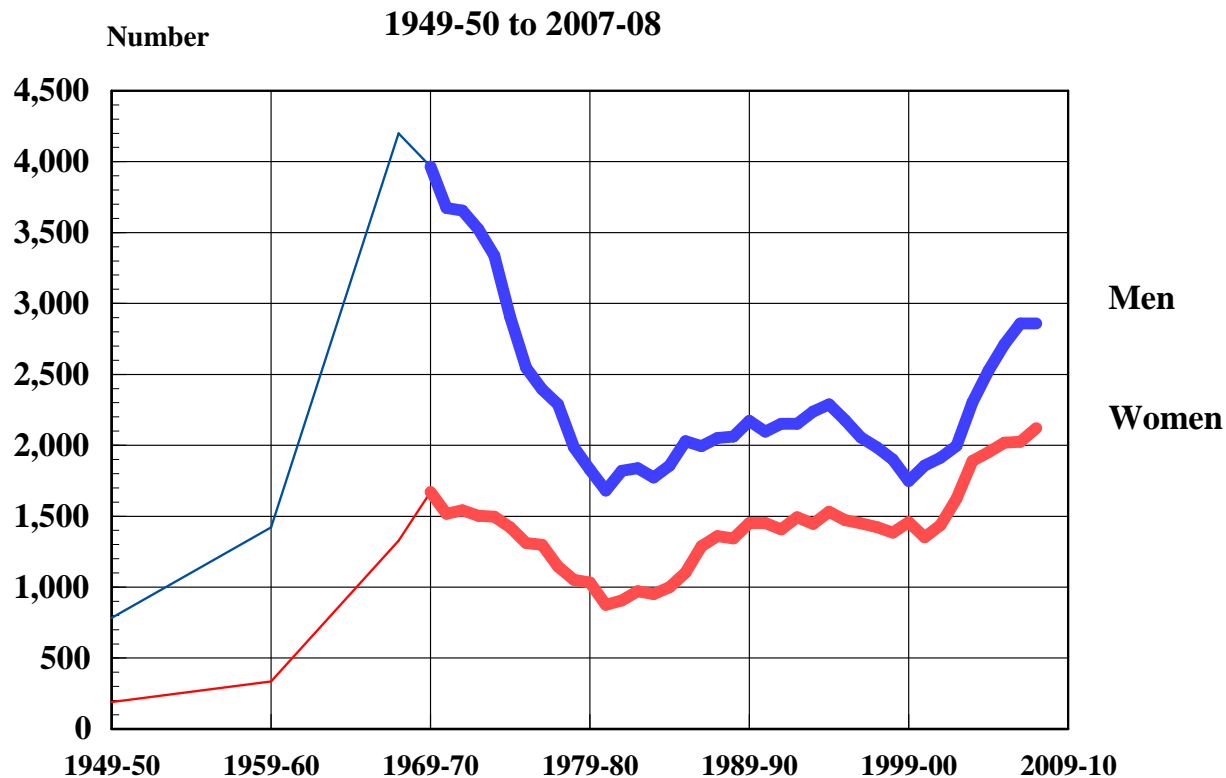


Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 312.

# MASTER'S DEGREES AWARDED, BY FIELD

## MATHEMATICS

### BY GENDER



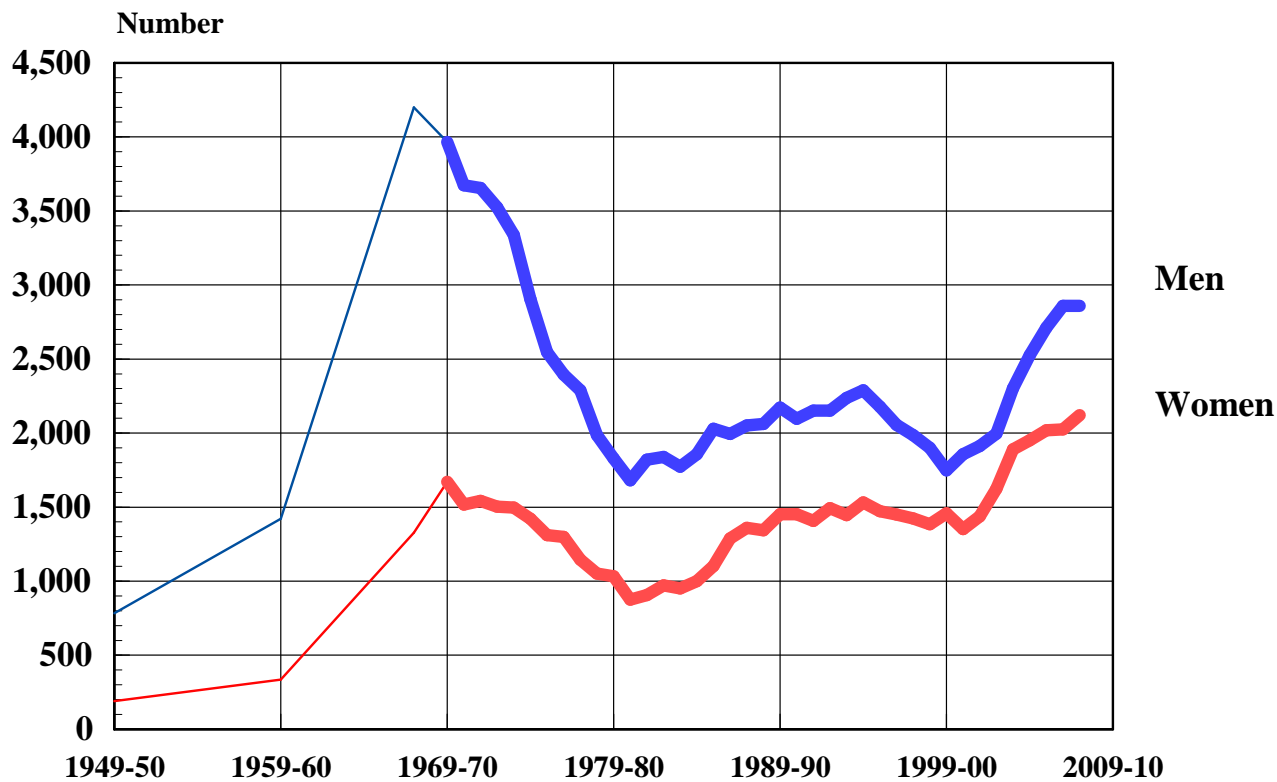
Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 312.

# BACHELOR'S DEGREES AWARDED, BY FIELD

## MATHEMATICS

### BY GENDER

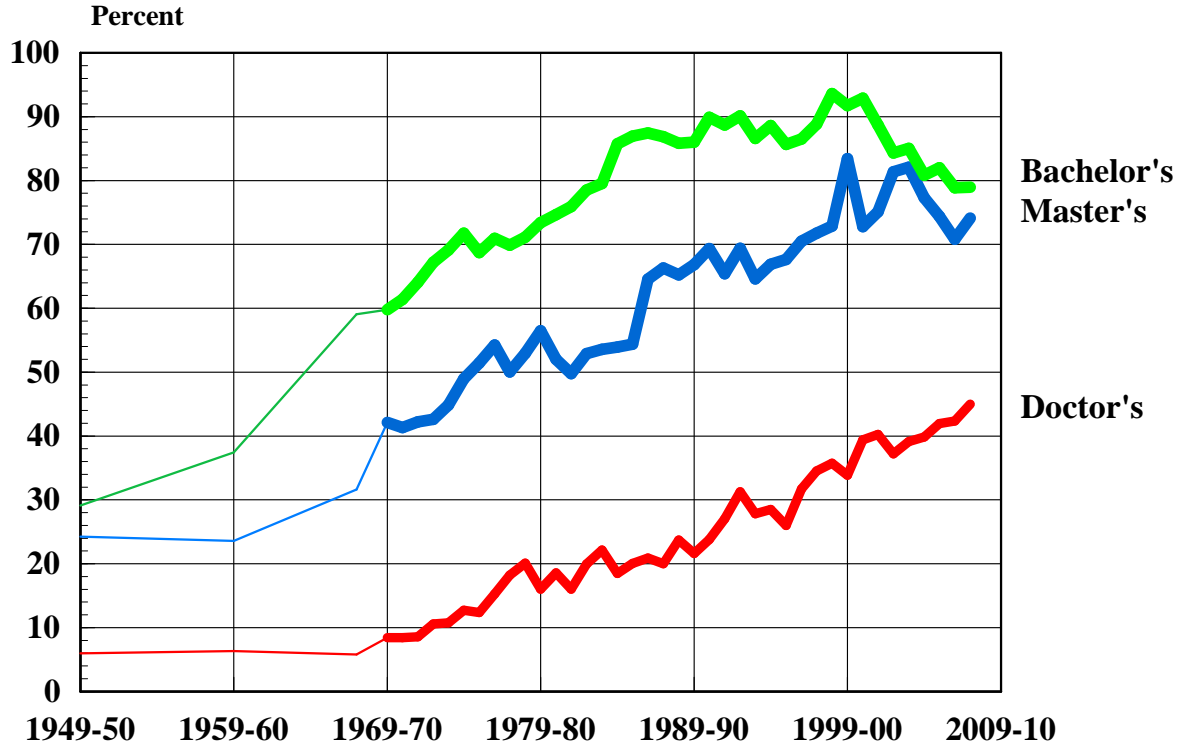
1949-50 to 2007-08



Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 312.

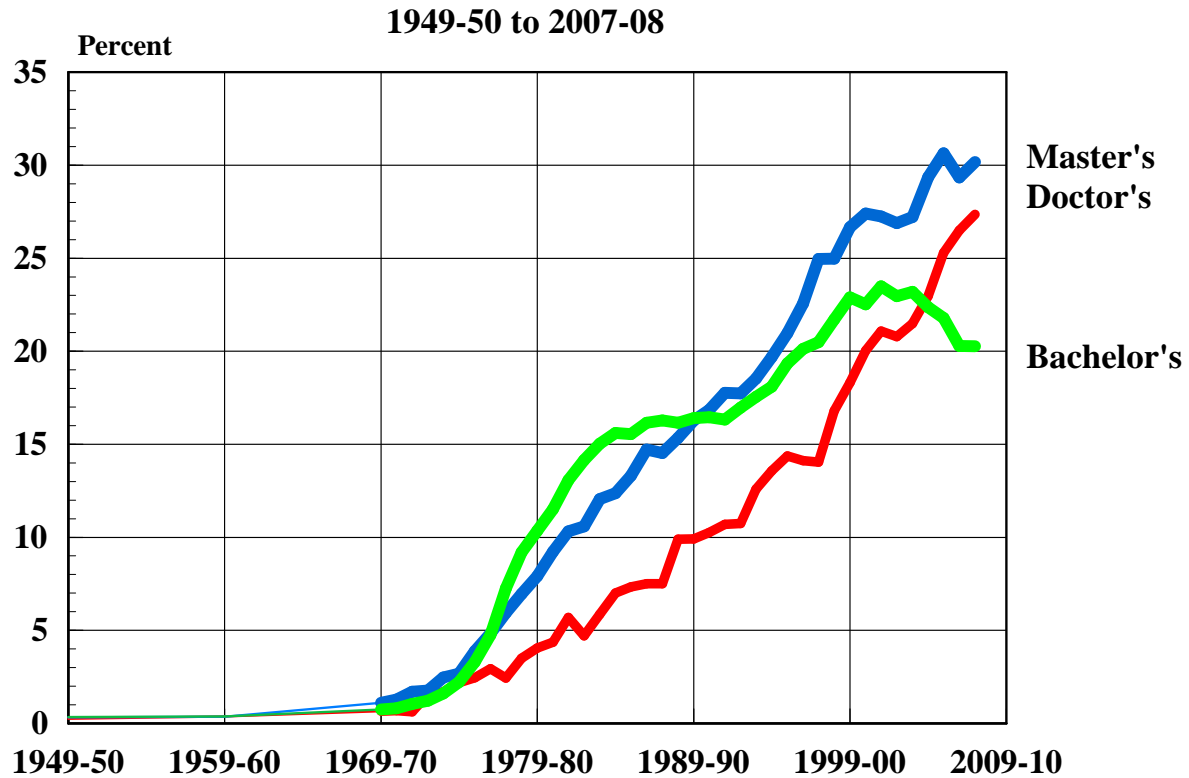


**PERCENTAGE OF DEGREES IN  
MATHEMATICS  
AWARDED TO WOMEN  
1949-50 to 2007-08**



Source: U.S. Department of Education, Digest of Education Statistics: 2009, Table 312.

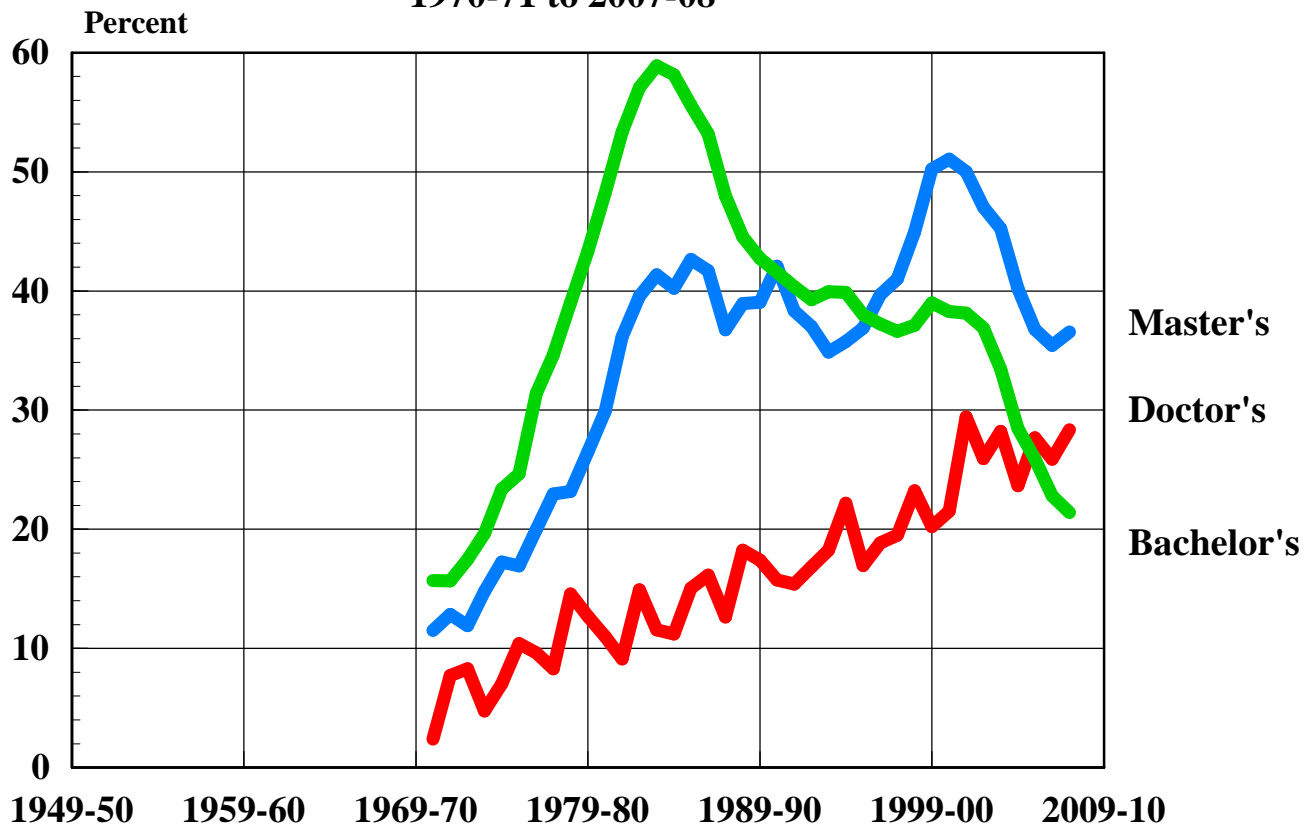
PERCENTAGE OF DEGREES IN  
**ENGINEERING**  
AWARDED TO WOMEN



Source: U.S. Department of Education, Digest of Education Statistics: 2009,  
Table 312.

**PERCENTAGE OF DEGREES IN  
COMPUTER AND INFORMATION TECHNOLOGY  
AWARDED TO WOMEN**

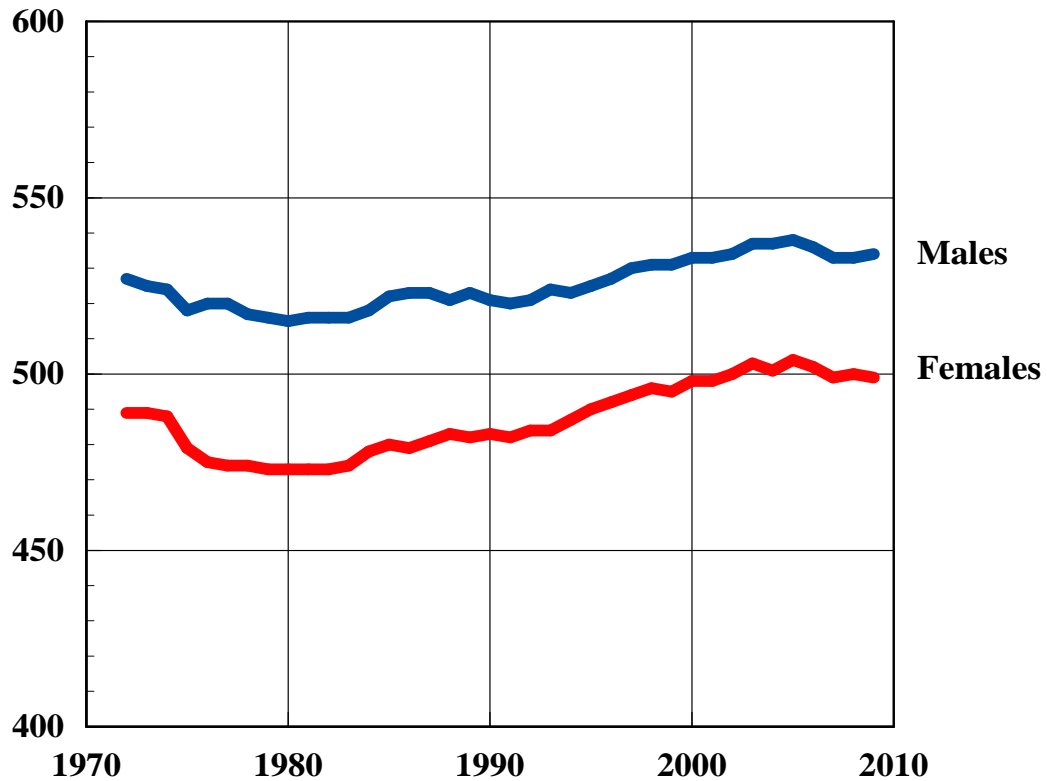
**1970-71 to 2007-08**



Source: U.S. Department of Education, Digest of Education Statistics: 2009,  
Table 303

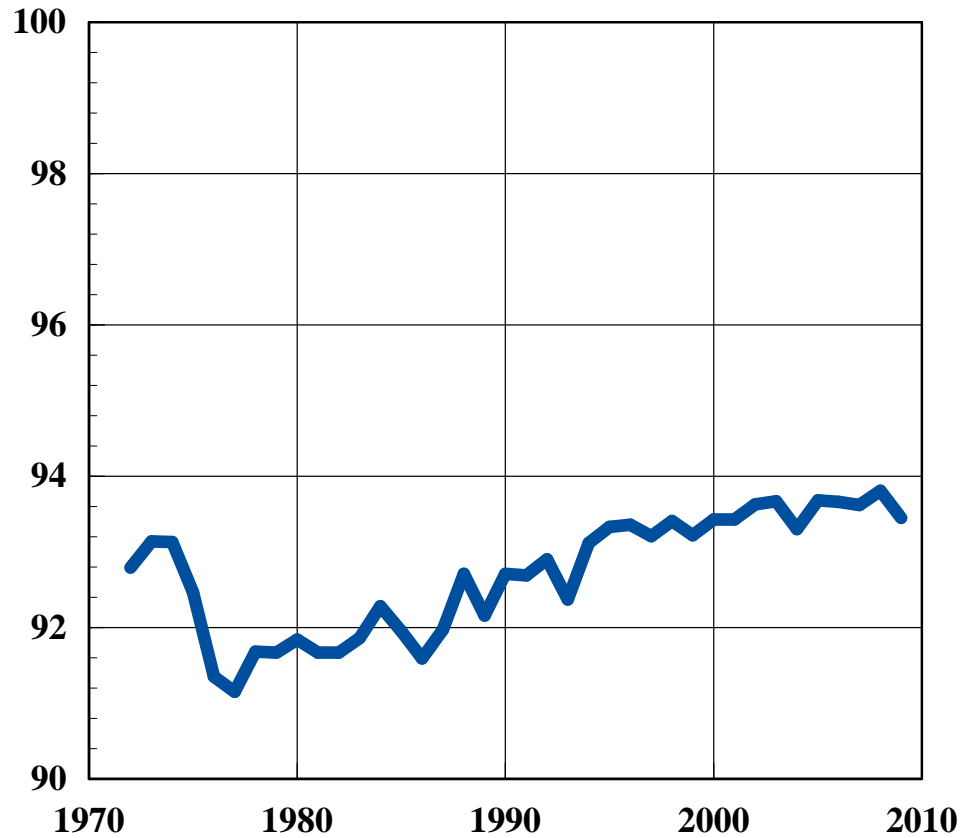
# MATHEMATICS SAT SCORES, BY GENDER

## Total Group Mean Scores of College-Bound Seniors, 1972-2009



Source of SAT data: College Board, 2009 College-Bound Seniors.

**MATHEMATICS SAT SCORES:  
FEMALE PERCENTAGE OF MALE SCORE  
Total Group Mean Scores  
of  
College-Bound Seniors, 1972-2009**

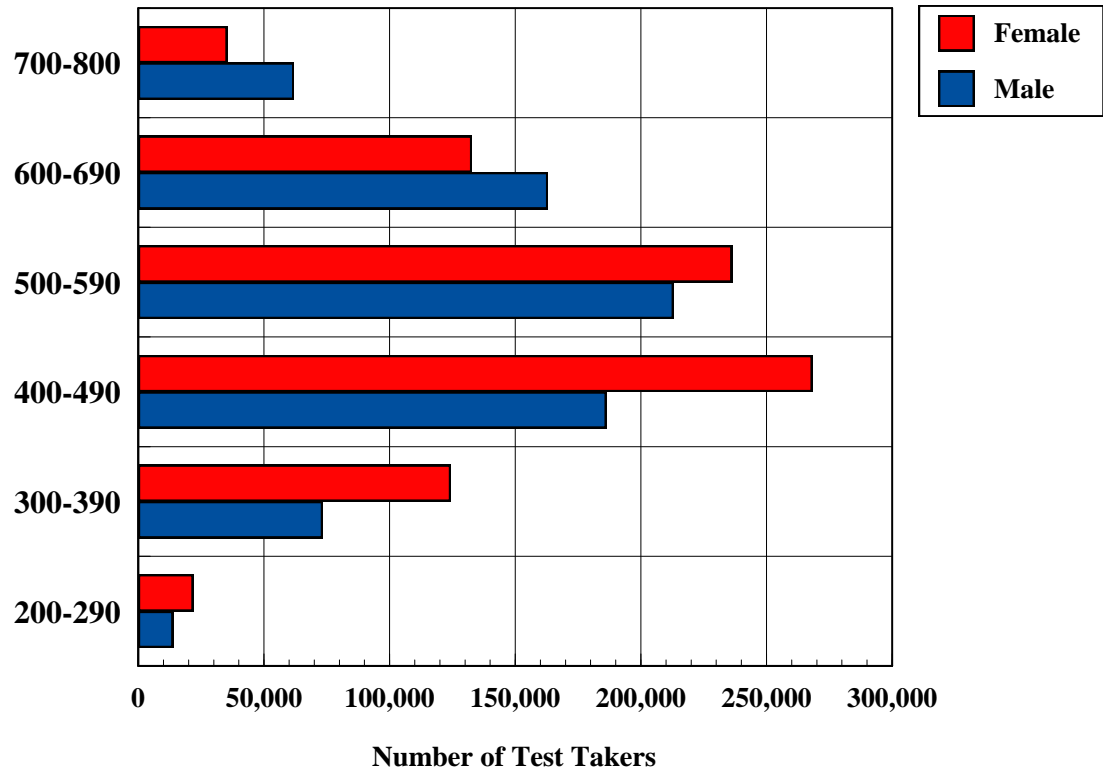


Source of SAT data: College Board, 2009 College-Bound Seniors.

**DISTRIBUTION OF 2009 COLLEGE-BOUND SENIORS  
BY LEVEL OF SAT SCORE:**

**MATHEMATICS**

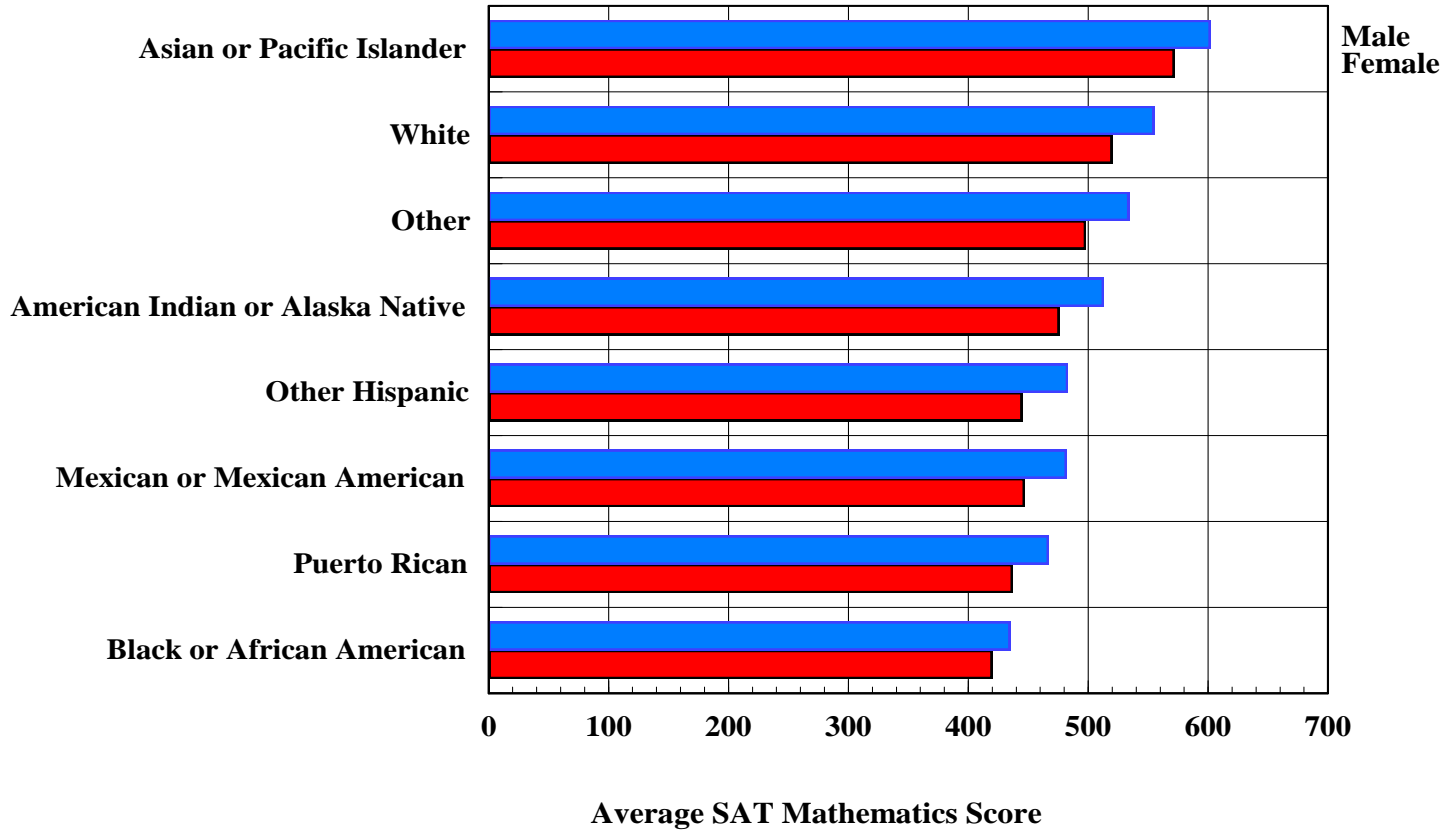
**BY GENDER**



Source: College Board, 2009 College-Bound Seniors.

# GENDER GAP IN SAT SCORES: MATHEMATICS

BY GENDER,  
BY ETHNICITY

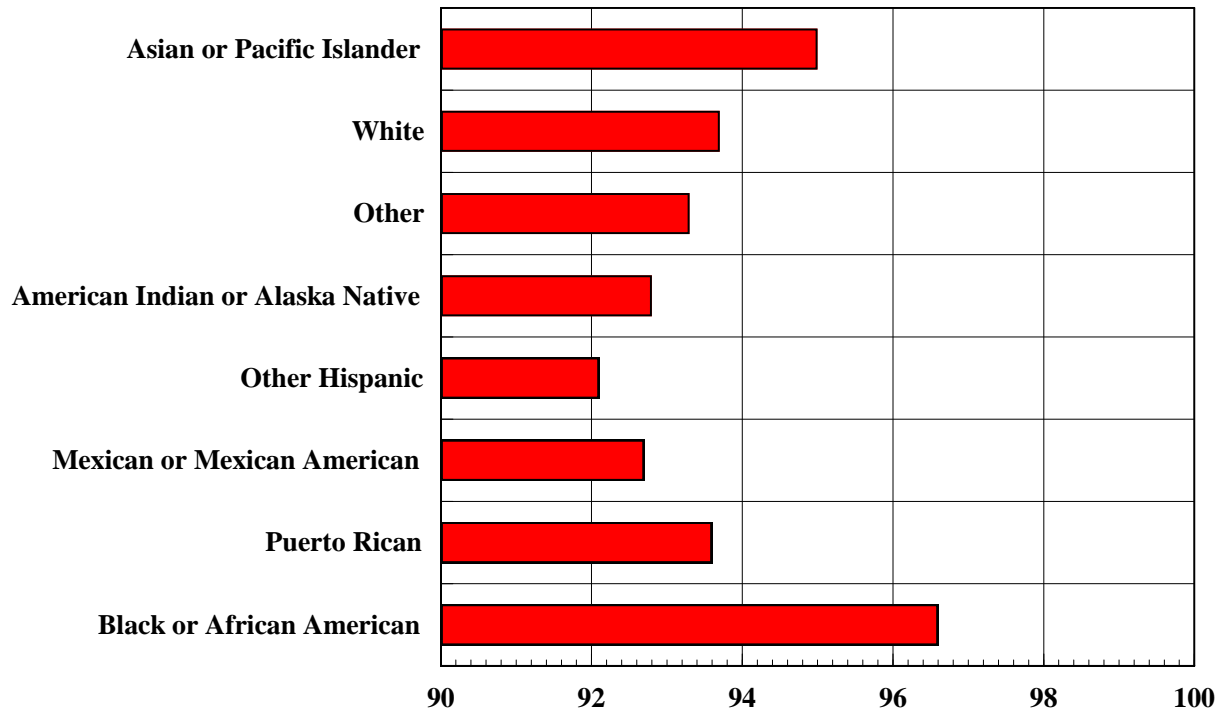


Source: College Board, 2009 College-Bound Seniors.

**GENDER GAP IN SAT SCORES:  
MATHEMATICS**

**FEMALE PERCENTAGE OF MALE SCORES,  
BY ETHNICITY**

**2009**



Source: College Board, 2009 College-Bound Seniors.



# NATIONAL POLICIES

- Policies to promote competitiveness
- Policies to promote STEM education
- Policies to overcome the gender gap

# POLICIES AND PROJECTS TO PROMOTE STEM EDUCATION:

- Finland - Fostering curiosity, understanding and enthusiasm
- Britain - Science ambassadors
- European Union – Cooperation with industry
- Belgium - Science website for youth
- Flanders – Touring mobile science van
- US - NASA send student experiments into space

RISING ABOVE  
THE GATHERING  
STORM

Memories and  
Inspiring Stories  
of  
Military  
Veterans



Thank you very much !!!

Your comments would be appreciated.

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