

IT, When's the Next Boom?



A Puzzle

Rosy Career Prospects

Occupational Outlook Handbook 2004-2005 Edition

- Computer Science and Computer Information Systems
- Among all occupations in the economy, computer and healthcare occupations are expected to grow the fastest ... computer occupations account for 5 out of the 20 fastest growing occupations in the economy. High growth rates among computer and healthcare occupations reflect projected rapid growth in the computer and data processing and health services industries.

Computer and Information Systems Managers

Occupational Outlook Handbook 2004-2005 Edition

- Expected to grow much faster than the average [i.e., more than 36%] for all occupations through the year 2012. Technological advancements will boost the employment of computer-related workers; as a result, the demand for managers to direct these workers also will increase.
- Despite the recent downturn ... the outlook for computer and information systems managers remains strong. In order to remain competitive, firms will continue to install sophisticated computer networks and set up more complex Internet and intranet sites. Keeping a computer network running smoothly is essential to almost every organization. Firms will be more willing to hire managers who can accomplish that.

Computer Systems Analysts, Database Administrators, and Computer Scientists

Occupational Outlook Handbook 2004-2005 Edition

- Expected to be among the fastest growing occupations through 2012 ... to grow much faster than the average [36% or more] as organizations continue to adopt and integrate increasingly sophisticated technologies. Job growth will not be as rapid as during the previous decade, however, as the information technology sector begins to mature and as routine work is increasingly outsourced overseas.
- In order to maintain a competitive edge and operate more efficiently, firms will keep demanding computer specialists who are knowledgeable about the latest technologies and are able to apply them to meet the needs of businesses.

Taulbee Survey

Computing Research Association

- Survey of 177 Computing Departments 2002-2004
- The number of new undergraduate majors dropped significantly from 23,033 to 17,706 (23%)
- Possible reasons
 - ▼ The decline in the technology industry and the moving of jobs offshore lead to less allure.
 - ▼ Restricted admission has an impact on the number of students who want to compete for positions in these programs.
 - ▼ The introduction of new undergraduate programs in the IT field has created alternatives.
- **“In any case, it is quite clear that the period of explosive growth in enrollments in Bachelor's programs is over.”**

Headlines

As Enrollments Drop

- “Computer Science Has Lost Appeal”
 - ▼ *Computing Canada*
- “Computer Science Enrollment Drops as Field's Luster Fades”
 - ▼ *Journal Record*
- “Jobs Go Unfilled as Fewer Students Show Interest in Computer Science”
 - ▼ *Wall Street Journal*

Headlines

As Enrollments Drop

- “Computer Science Has Lost Appeal”
 - ▼ *Computing Canada (1986)*
- “Computer Science Enrollment Drops as Field's Luster Fades”
 - ▼ *Journal Record (1987)*
- “Jobs Go Unfilled as Fewer Students Show Interest in Computer Science”
 - ▼ *Wall Street Journal (1987)*

Analysis

From 1986 *Computing Canada*

“The trend will ease overcrowding in computer classes, and students are learning about computers within other fields of study. ... the declining enrollment is a function of the job market. Students used to consider the computer field as the best place to find employment, but today, employers do not seem to be placing as much emphasis on technical training among recruits.”

Computing Enrollment Cycles

- 1986 - Bust
- 1996 - Boom
- 2002 - Bust
- 200? - Boom?

1986 Bust

UCLA Survey of 552 colleges

- 1982 8.8% of freshman choose computing
- 1986 3.5%
 - ▼ UNC Computing enrollment drops by half
 - ▼ Northeastern computing freshmen drop 40%
 - ▼ Cornell computing enrollment falls 25%

Headlines: Boom

As Enrollments Rise

- College Enrollments: Rising by Large Degrees
 - ▼ *Computerworld* (1997)
- MIS: Big Major on Campus
 - ▼ *Computerworld* (2000)

1996 Boom

Computerworld (1997)

- Computing enrollments up as much as 60% in 1996-1997 over the prior year
 - ▼ MIT
 - ▼ Carnegie Mellon
 - ▼ Harvard
 - ▼ University of Minnesota
 - ▼ University of Texas

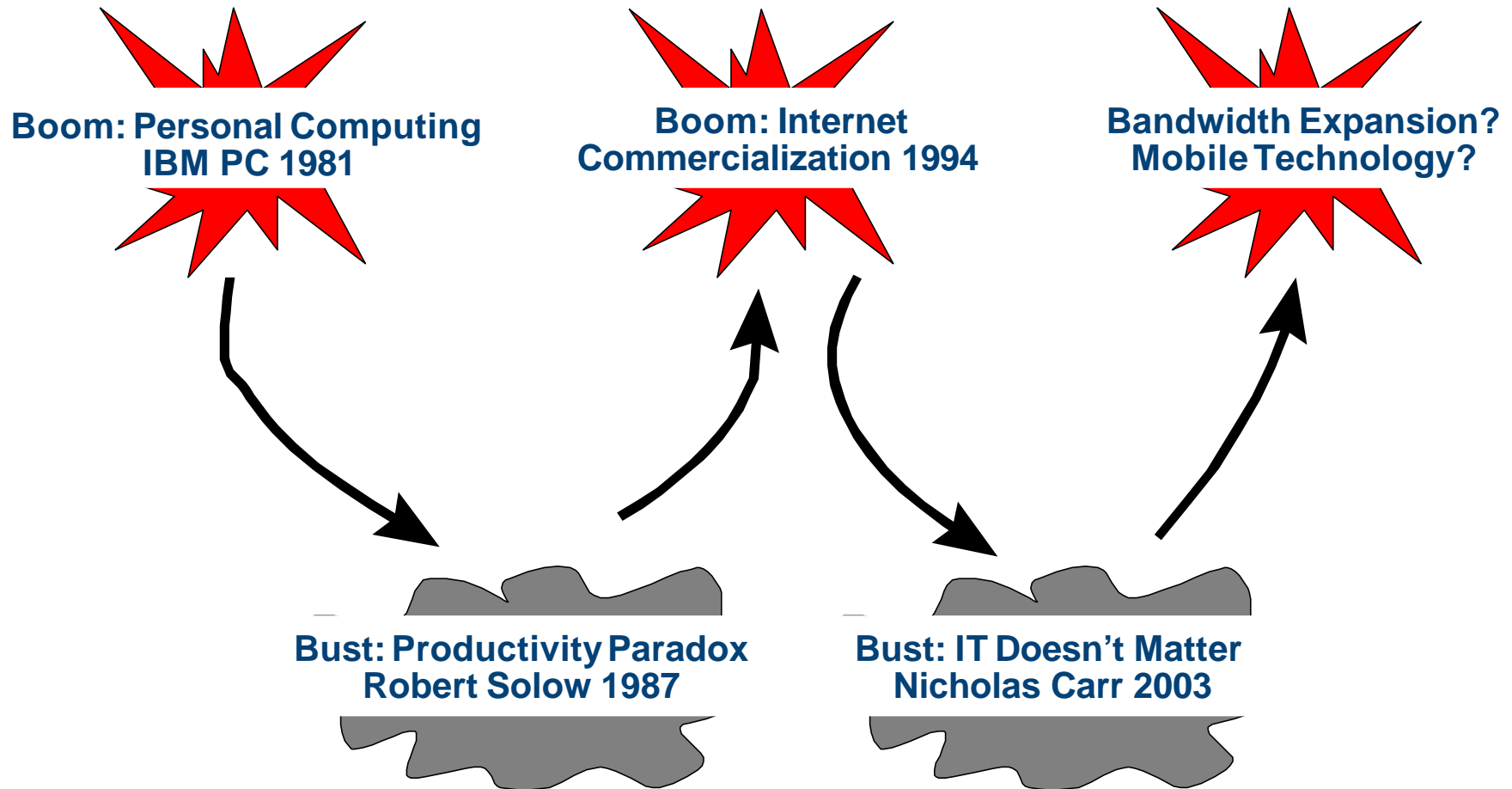
2002 Bust

Computer Science Enrollments

- Carnegie Mellon CompSci School: Applications down 36% from 2001 peak
- Virginia Tech: Similarly down 20%
- MIT: Computing freshmen down 20%
- Taulbee survey: Freshmen fall by 23%

Driver Reflections?

IT and Business



Driver Reflections?

IT and Business

- Boom: Personal Computing
 - ▼ IBM PC 1981
- Bust: Productivity Paradox
 - ▼ Robert Solow 1987
 - ▼ No IT impact on productivity
- Boom: Internet Commercialization
 - ▼ WWW, Internet Society, InterNIC, 1992-1993
 - ▼ New hosts by the thousands in 1994
- Bust: IT Doesn't Matter
 - ▼ Nicholas Carr 2003
 - ▼ IT is a non-strategic utility
- Boom: Next?
 - ▼ International Bandwidth Expansion?
 - Positive
 - White collar offshore outsourcing
 - ▼ Mobile technologies?
 - Positive
 - Telephony/Internet integration

Computing Occupations Impact?

Just Remember...

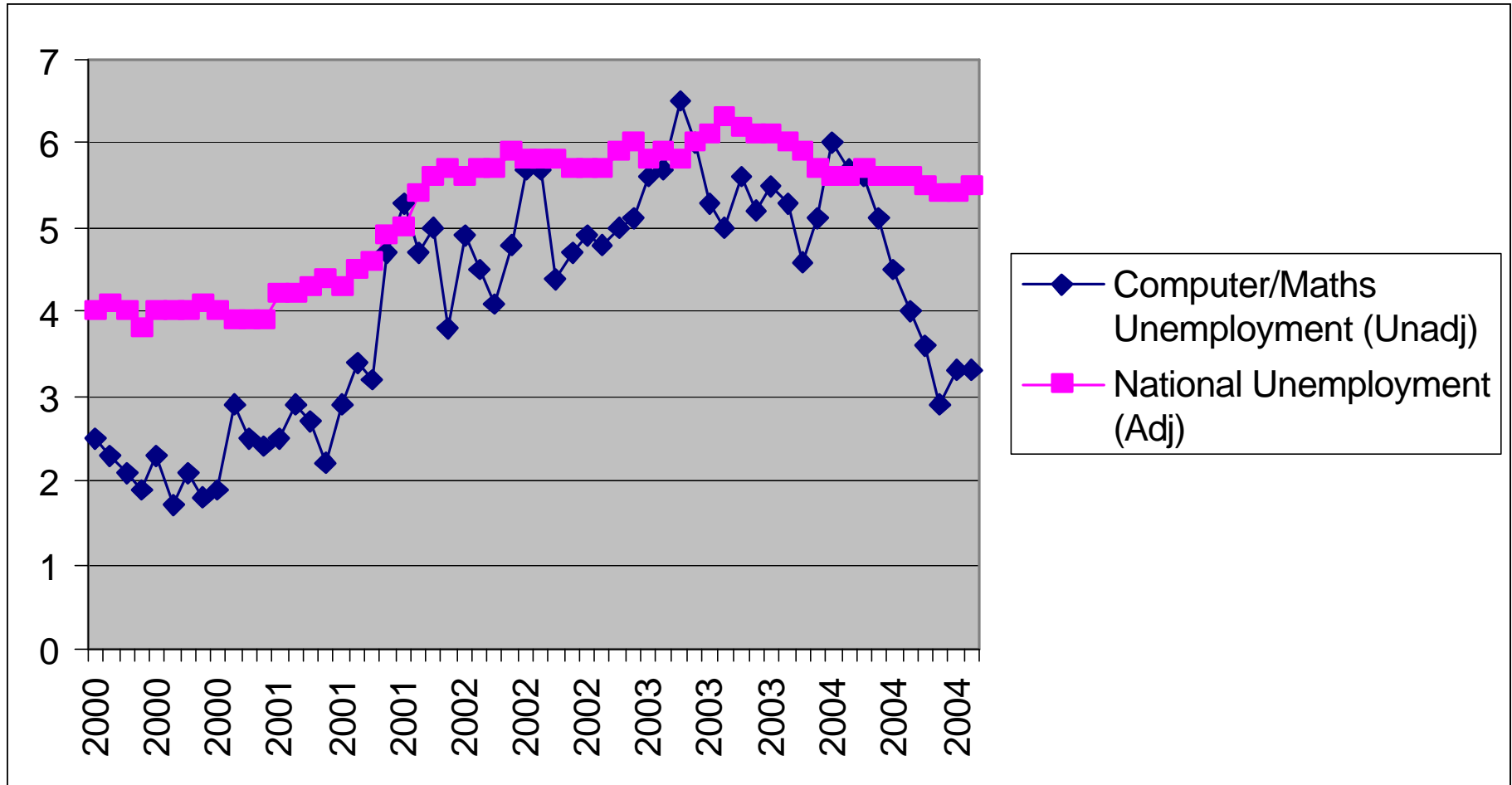
- Shift in occupational emphasis
- Long term career prospects strong
- “Expected to be among the fastest growing occupations through 2012 ... to grow much faster than the average [36% or more] ... Job growth will not be as rapid.”

Enrollments reflect short-term response

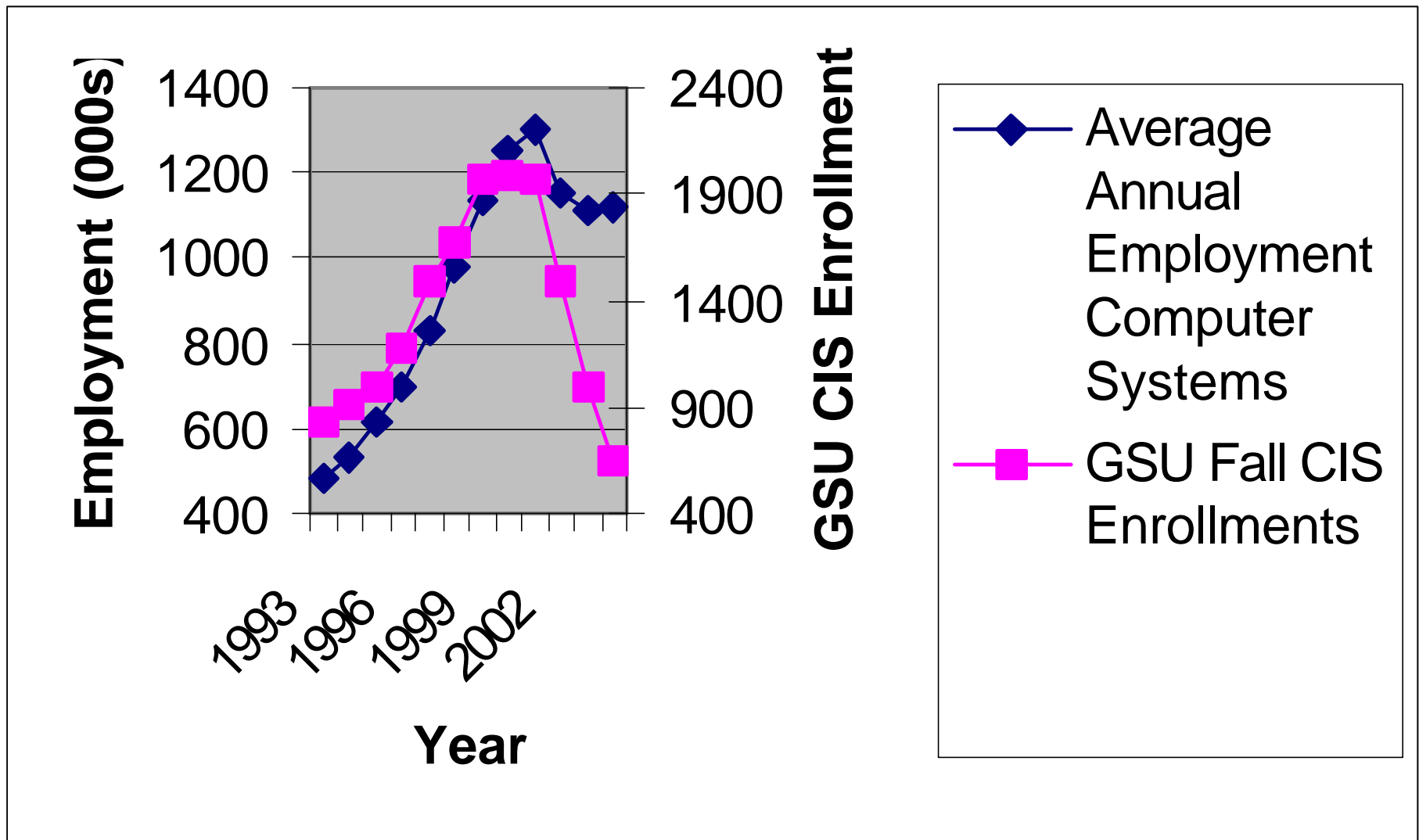
In Expanding, Boom and Bust Areas

- Career planning horizons
 - ▼ Lifetime career planning?
 - ▼ First job?
- Enrollment and employment data
 - ▼ Computing occupations
 - ▼ GSU CIS enrollments

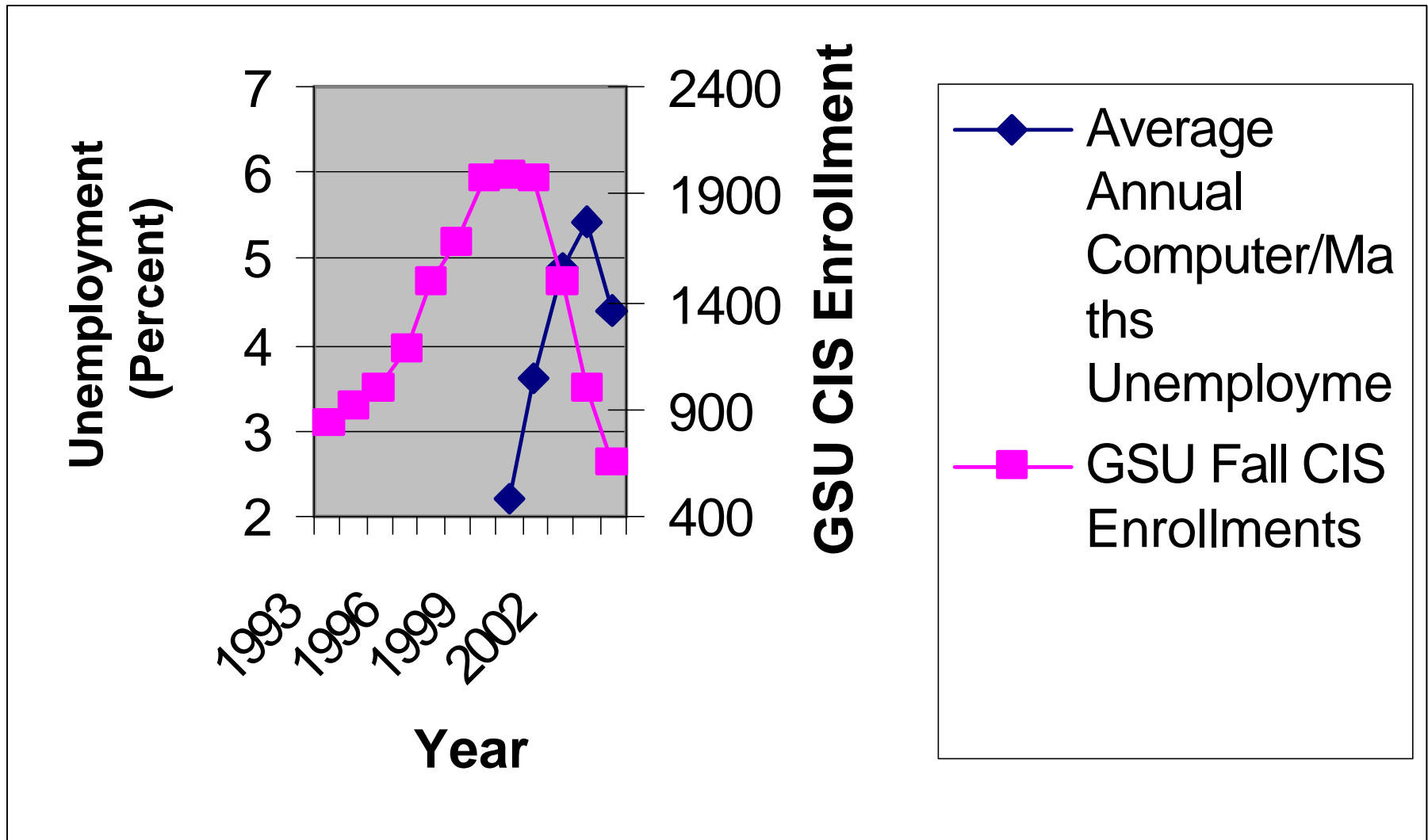
Unemployment Trends: Computing and National



Computing Jobs and Enrollment Trends



Computing Unemployment and Enrollment Trends



Enrollments Reflect Short-term Horizons

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