Latest Trends in the Physics Workforce

American Physical Society
Baltimore, Maryland
March 15, 2006

Roman Czujko
Director, Statistical Research Center
Acknowledgements

Data Sources
Surveys by AIP, NSF

AIP Staff
Rachel Ivie
Patrick Mulvey
Starr Nicholson
Casey Tesfaye
“Double the number of science, technology, engineering, and math graduates by the year 2015.”

Tapping America’s Potential: The Education for Innovation Initiative, Business Roundtable, July 2005
“Rising Above the Gathering Storm”
National Academies, October 2005

20 Recommendations in four areas:

1. Add 10,000 science and math teachers in K-12
2. Increase federal investment in science and engineering research
3. Attract and retain best and brightest for study and research in science and engineering
4. Encourage innovation through incentives
The number of jobs requiring technical skills is increasing and fewer Americans are entering degree programs in science, math and engineering.

Craig Barrett, Chair of Intel
Business Week, December 2005
Protect America’s Competitive Edge Act
3-bill package in senate to implement all 20 NAS recommendations, January 2006

American Competitiveness Initiative
State of Union address, President Bush, 2006

National Innovation Initiative
140 business, political and education leaders
Underlying Themes:
Supply
Demand
International Competitiveness
Innovation
Investment in Future
“There is no shortage of claims of shortage.”

Michael Teitelbaum, Sloan Foundation
Supply ➔

Innovation ➔

International Competitiveness
Supply ➔

Employment ➔

Innovation ➔

International Competitiveness

AIP Statistical Research Center, Enrollments and Degrees Report and * NCES Digest of Education Statistics
Four percent of the respondents indicated they were unemployed at the time of the survey, which represents about 160 individuals.
Field of Employment:
- Computer or Info. Systems
- Engineering
- Physics or Astronomy
- Other Science

Note: 2% of the classes of 2002-2003 indicated that their employment field was education.

AIP Statistical Research Center, Initial Employment Report
Typical Range of Starting Salaries for Physics Bachelors in the Private Sector, Classes of 2002 & 2003

Typical salaries are the middle 50%, i.e. between the 25th and 75th percentiles.

S & E refers to positions in science and engineering related employment.

AIP Statistical Research Center, Initial Employment Report
Highest Degree Obtained by Physics Bachelors, Five to Seven Years After Degree

- No Additional Degrees: 34%
- Earned a Masters: 25% (Physics & Astronomy: 12%, Other Science & Engineering: 5%, Non-Science: 7%)
- Currently Enrolled in School: 24% (Physics & Astronomy: 18%, Other Science & Engineering: 4%, Non-Science: 2%)
- Earned a PhD: 12% (Physics & Astronomy: 8%, Other Science & Engineering: 3%, Non-Science: 1%)
- Earned Other Degrees: 5% (Physics & Astronomy: 4%, Other Science & Engineering: 1%, Non-Science: 0%)
Number of physics PhDs conferred in the United States, 1931 to 2004.

Statistical Research Center, Enrollments and Degrees Report.
<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Foreign N</th>
<th>U.S. citz. N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall 2004</td>
<td>1292</td>
<td>1746</td>
</tr>
<tr>
<td>Fall 2003</td>
<td>1481</td>
<td>1697</td>
</tr>
<tr>
<td>Fall 2002</td>
<td>1339</td>
<td>1535</td>
</tr>
<tr>
<td>Fall 2001</td>
<td>1434</td>
<td>1343</td>
</tr>
<tr>
<td>Fall 2000</td>
<td>1485</td>
<td>1228</td>
</tr>
<tr>
<td>Fall 1999</td>
<td>1328</td>
<td>1182</td>
</tr>
<tr>
<td>Fall 1998</td>
<td>1251</td>
<td>1166</td>
</tr>
</tbody>
</table>
Initial employment of physics PhDs, 1979-2003.

Percent

New Physics PhDs Accepting Postdocs, By Citizenship

Source: AIP Statistical Research Center, Initial Employment Survey
Concluding Remarks

Millions more jobs in future - *don’t believe it*

Americans avoiding science and math - *not accurate*

More people should earn S&E degrees - *definitely*
## Employer Type by Year of PhD, 2001

<table>
<thead>
<tr>
<th>PhD Year</th>
<th>Industry %</th>
<th>Academe %</th>
<th>Hospital %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996-2000</td>
<td>46</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>1991-1995</td>
<td>54</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>1986-1990</td>
<td>41</td>
<td>36</td>
<td>21</td>
</tr>
<tr>
<td>1981-1985</td>
<td>47</td>
<td>34</td>
<td>18</td>
</tr>
<tr>
<td>1976-1980</td>
<td>46</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>1971-1975</td>
<td>45</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>1970 &amp; earlier</td>
<td>37</td>
<td>44</td>
<td>18</td>
</tr>
</tbody>
</table>

Source: NSF Survey of Doctoral Recipients
Thank you