

Chapter 10 - Industrially Employed Physicists: Primarily in Other STEM Fields

Employers

This profile is based on the responses of 30 mid-career physicists employed in industry and working primarily in STEM fields other than physics, computer science or engineering. These physicists worked for an assortment of large corporations and medium-size companies that provided highly sophisticated products and services. These companies had diverse specializations including applied mathematics, bio-tech and gene sequencing, audio recording equipment, and laser surgery.

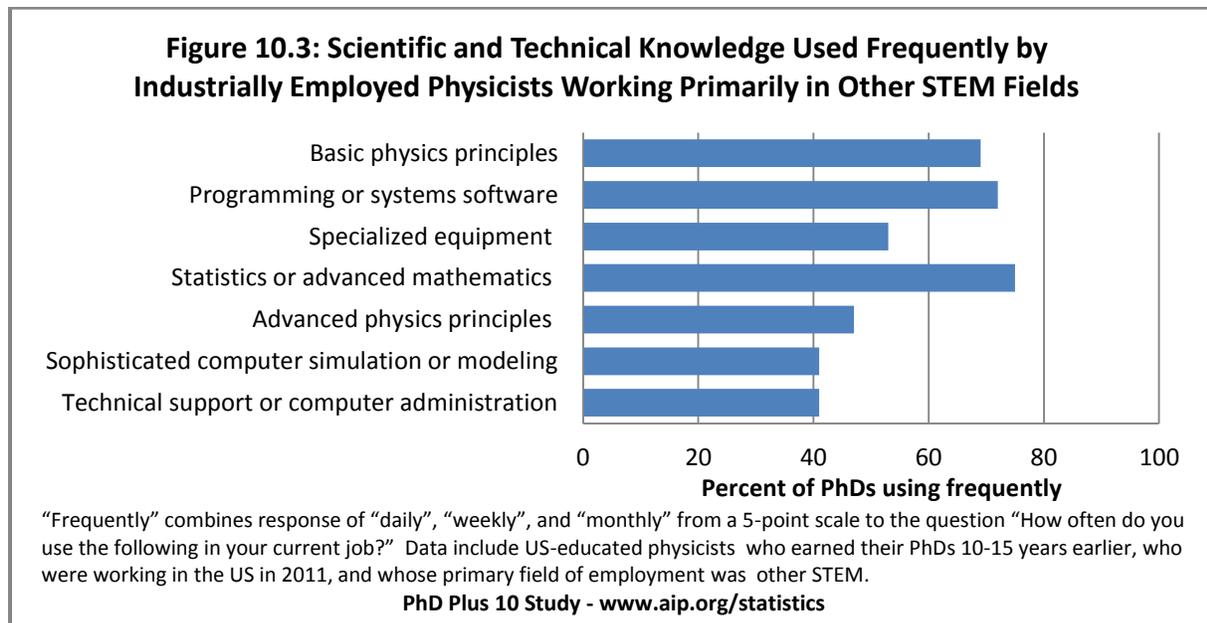
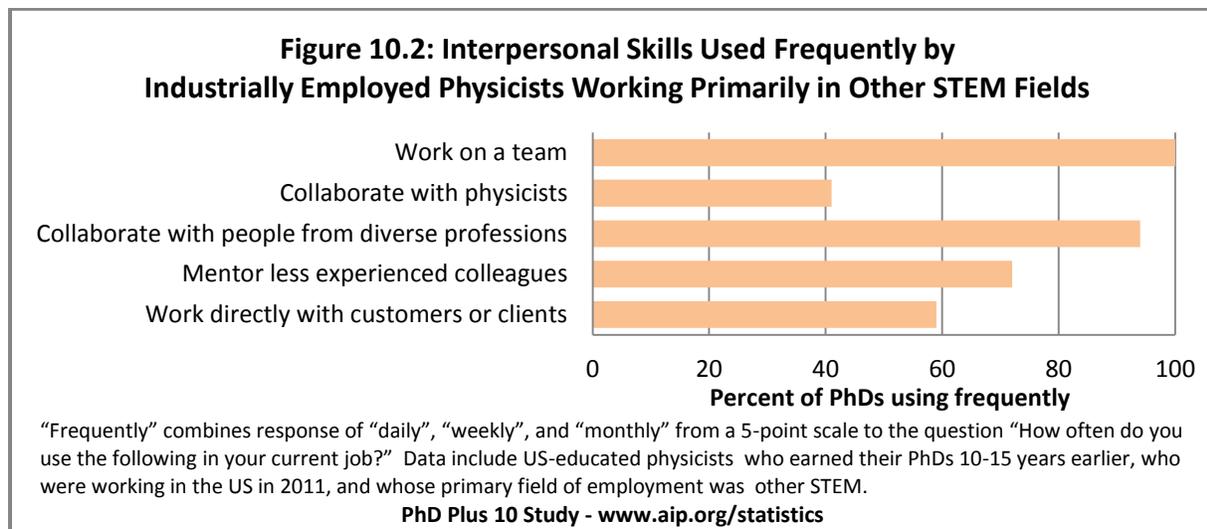
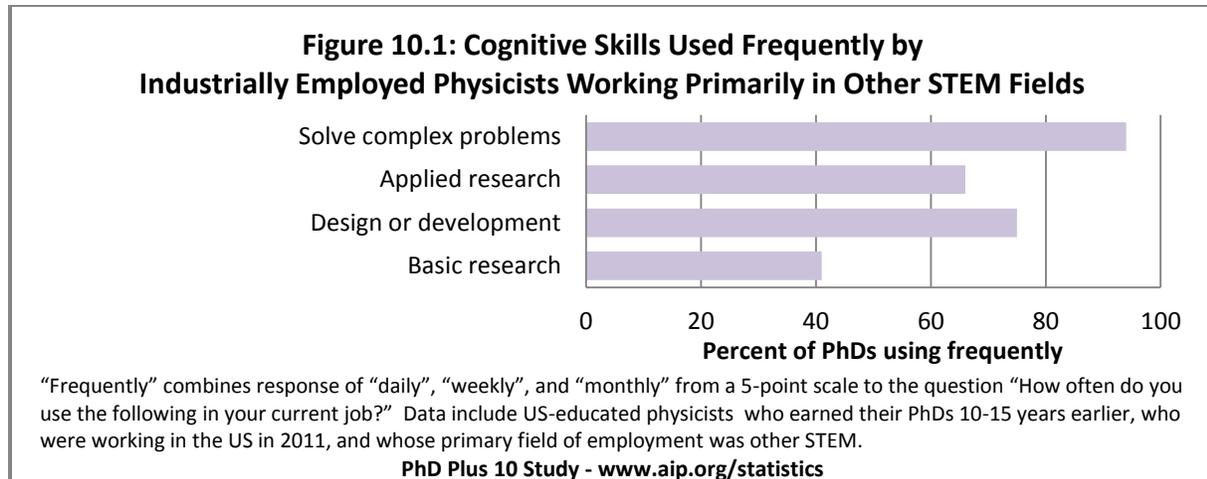
Job titles

Table 10.1 lists common job titles of mid-career physicists who were employed in industry and were working in other STEM fields 10 to 15 years after earning their doctorates. Job titles were often preceded by words like “senior” or “principal” to indicate levels of experience and responsibility.

| Table 10.1 Common Job Titles of Industrially Employed Physicists in Other STEM Fields, 2011 |
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| Scientist |
| Engineer |
| Manager |
| Director |
| Member Technical Staff |
| PhD Plus 10 Study - www.aip.org/statistics |

Job duties

Mid-career physicists working in industry and primarily engaged in other STEM fields described various responsibilities and duties many of which were unique to the field in which they worked. Several physics PhDs who were employed by biotech companies described working on analyzing gene sequences and developing diagnostic tools to aid in genomic analysis. Other physicists described using applied mathematics for failure analysis and reliability studies, to develop algorithms for optimal business decision making, or to forecast hospital patient flow. Some physicists described leading teams to improve their companies' products or processes.



Knowledge and skills used on the job

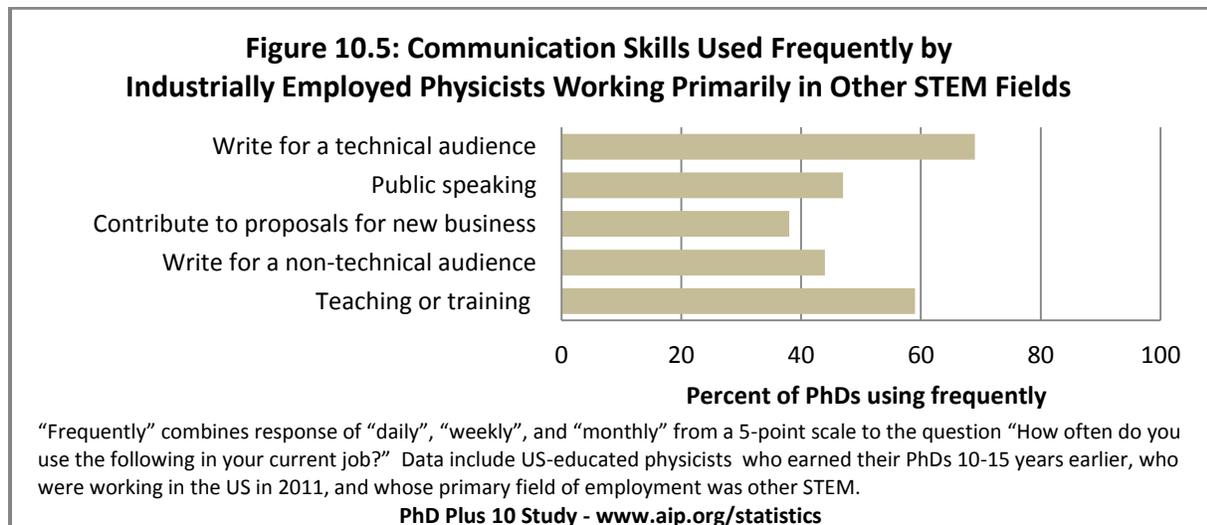
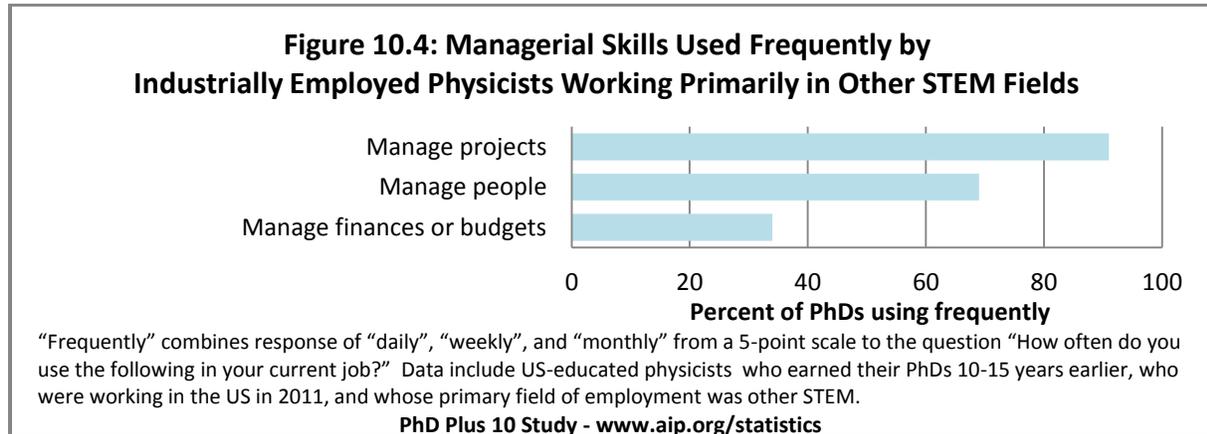
Mid-career physicists who worked in companies primarily engaged in other STEM fields had varied jobs, but there was consistency in several professional skills used frequently by them in their work. All these physicists reported working on a team and nearly all collaborated with people from diverse professions, and quite a few frequently mentored less experienced colleagues (Figure 10.2). Nearly all reported that they frequently solved complex problems (Figure 10.1), and managed projects (Figure 10.4).

These physicists used various types of scientific knowledge depending on their positions. The most frequently cited were statistics or advanced math, use of programming or systems software, and basic physics principles (Figure 10.3). Communication was also very important in this line of work and physicists most commonly cited the need to write for a technical audience and training (Figure 10.5).

Most rewarding aspects of their jobs

Physicists who worked in other STEM fields 10 to 15 years after earning their PhDs enjoyed various aspects of their work. The following main themes occurred often among the comments they wrote:

- Physics PhDs enjoyed the intellectual challenge of their work. Several used the term “complex” to describe problems or issues that they worked to resolve.
- Many mid-career physicists also thrived on the real-world impact of their work. Several felt that the problems they were working on were “critical” or “mattered” to society at large. They enjoyed seeing their work “applied in practice”.
- Several of these mid-career physicists noted the joy of working with smart people.



| Table 10.2: What Are the Most Rewarding Aspects of Your Job? |
|---|
| Selected verbatim comments from PhD physicists working primarily in other STEM fields, 2011 |
| <i>Seeing my technology applied in the marketplace to help with real-world problems.</i> |
| <i>Working with customers helping them to solve problems that affect the environment, food safety, and drug development.</i> |
| <i>See the direct results of my work applied in practice. Collaborate with a diverse team. Work on a changing range of projects over time. Develop novel solutions to complex problems.</i> |
| PHD Plus 10 Study - www.aip.org/statistics |