

Placement Opportunities for Human Factors Engineering and Ergonomics Professionals In Industry, Government/Military and Consulting Positions

Mark A. Cummings-Hill, C. Don Means, Lisa Harrison, & William F. Moroney

The University of Dayton, Dayton OH

Abstract

During the period from November 1997 through September 1998, the Placement Service of the Human Factors and Ergonomics Society distributed announcements describing 249 new positions available for human factors engineers and ergonomics professionals. This paper describes placement opportunities for HFE and ergonomics professionals in industry, government /military and consulting positions (N=205). The attributes of the position descriptions examined include: degree requirements, industrial sector, areas of expertise, required work experience, salary, geographic location, job description and skills required. Sixty percent of the positions describe the masters degree as the minimum requirement. The area of expertise most frequently requested (67.8%) was HCI, with test and evaluation (specifically usability testing) being specified for 48.3% of the positions. Consulting, computer software, computer hardware and aviation/aerospace were the four leading industries offering positions. The geographical areas with the most jobs were the California and the Northeast. The most frequently cited (27%) primary area of responsibility was software design.

During the period from November 1997 through September 1998, the Placement Service of the Human Factors and Ergonomics Society (HFES) distributed announcements describing *at least* 249 new positions available for human factors and ergonomics (HF&E) professionals. We say *at least* because some of the data for the month of September were lost and could not be recovered for this analysis. Employers completed a "Job Listing" form, provided by the HFES Placement Service, on which they provided information on a variety of factors including: degree requirements, major field of study, areas of expertise, required work experience, geographic location, job description, employment sector and skills required. The analysis of these data is the basis for this article. Please note that only data obtained for new positions are analyzed in this article. Thus positions listed prior to Oct 1997, which were still listed as Positions Available in the period subsequent to Oct 1997 were not included. While this prevents a position from counting twice in separate surveys it does not allow a direct comparison between these data and those reported previously (Moroney & Adams, 1996; Moroney, Anderson, and Soest, 1997, Cummings, Barshay, Lesaigle and Moroney, 1998). Thus the numbers provided are an underestimate of the number of positions announced.

Furthermore, this analysis is not a complete listing of all the positions available to HF&E professionals. Related positions are also listed with other professional placement services.

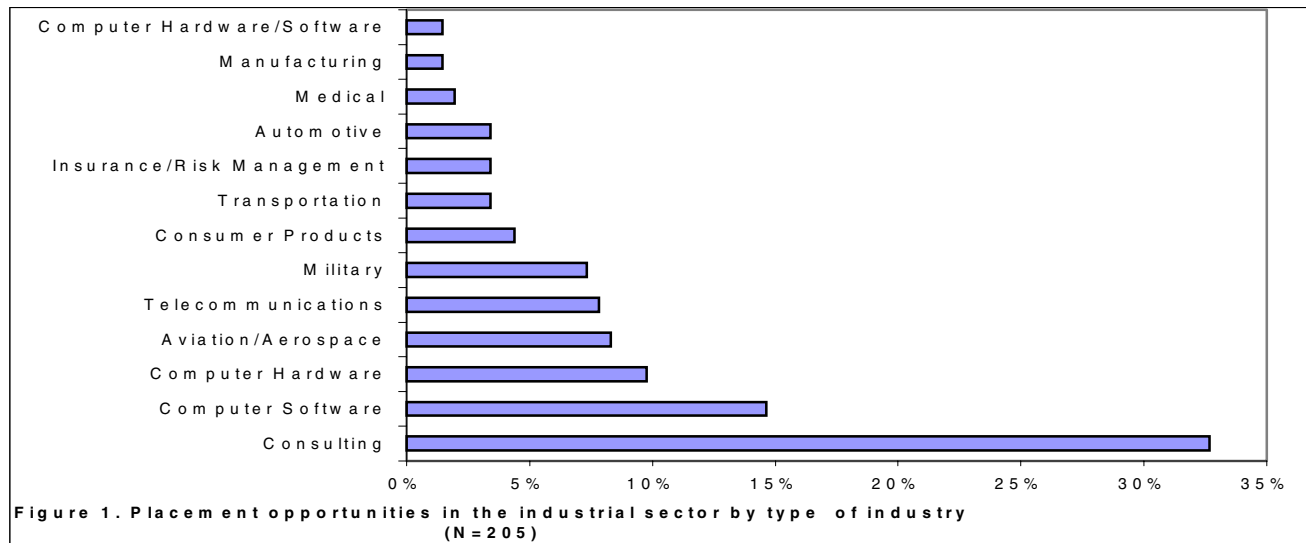
This paper describes placement opportunities for HF&E professionals in industry, government/ military and consulting positions (N=205).

We will provide the HFES placement service with a separate overview of all advertised positions, and a description of academic (N=16, an increase of 10 from last year) and internship positions (N=28, a decrease of six from 96-97).

Placement Opportunities by Sectors

The 205 positions discussed in this paper were categorized into three employment sectors: industry (61%), consulting (21.9%) and government/military (17%). The industry sector increased only one percent over last year, while consulting increased 6%, and govt./military decreased 6%). The number of positions available in industry was 114 in the 1995-1996 survey, 93 in the 1996-1997 survey, and a 125 in this survey. The positions were further classified according to industrial sector (see Figure 1).

Industrial sector was based on the type of industry submitting the position announcement. Some classifications were made easily (Hughes, Lockheed: aviation/aerospace: Ford, GM, Toyota: automotive). Positions in organizations which employ human factors specialists and ergonomists as consultants in a variety of areas (Carlow, Humantech) were classified as consulting organizations. While organizations



that supplied consultants in specific areas (insurance/risk management: State Farm, Travlers) were classified by the specific area. Most (67) of the positions were in consulting, with computer software and computer hardware following with 30 and 20 positions respectively. As will be seen later in the data, Human Computer Interaction (HCI), contributed to almost all sectors.

Positions in computer related industries have remained high in all surveys, accounting for 24% of the positions in this survey up from 22 % of the positions in the 1996-97 time frame. However, the same pattern does not hold for telecommunications. Positions in telecommunications, which comprised 7% of the position opportunities in the 1995-96 (Moroney, Anderson, and Soest, 1997) and 13 percent in both the 1994-95 analysis (Moroney & Adams, 1996) and the 1996-97 surveys fell to 8% in the current data set. Similarly, aviation/aerospace which accounted for 15 percent of the positions in the 1996-1997 time frame accounted for 8% of the positions available in the current data set.

Minimum Degree and Minimum Years Experience

With respect to the minimum degree requirements, master and bachelor degrees were requested for 90% of these positions (95% in last years survey), with the masters degree being specified for 60.5% of the 205 positions (up 7% from last years survey). Table 1 provides a more detailed description, broken into type of degree by employment sector. With the exception of the government/military sector at the doctoral level the median experience desired across all degree levels was between 1 and 4 years, with the most common median being 3 years. The requirement for zero experience for govt./military positions is driven a program to hire fresh outs or to recruit for uniformed military at the doctoral level.

Table 1

Years of Experience and Degree Required for Each Employment Sector

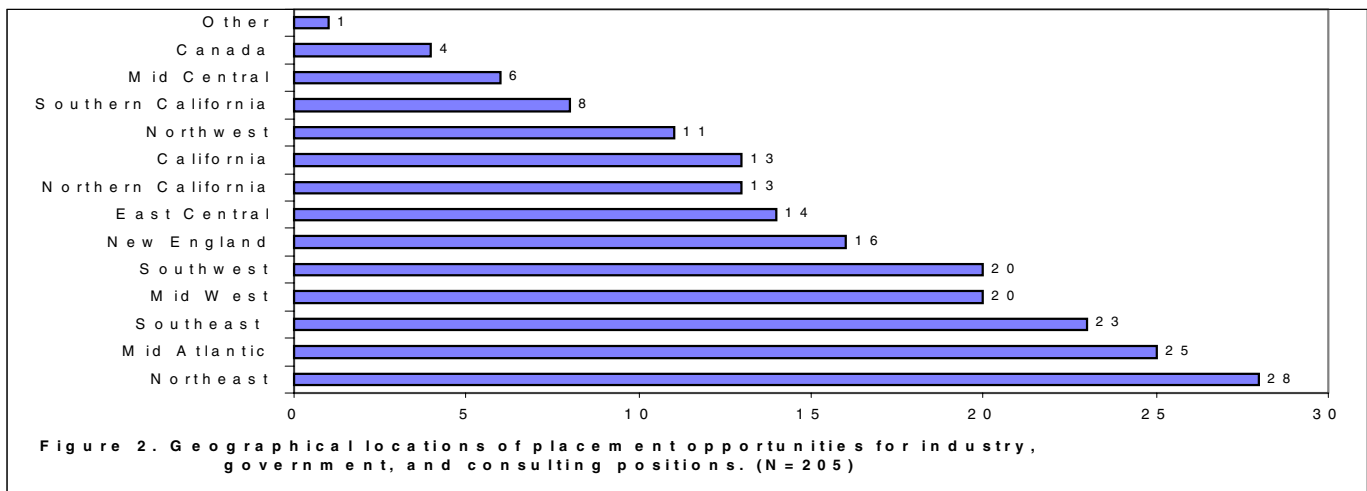
Employment Sector*	Degree Required	Years of Experience Desired	
		Median	Range
Industry (N=125)	Bachelor (N=44)	2.0	0-8
	Master (N=72)	4.0	0-10
	Doctor (N=9)	1.0	0-3
Consulting (N=45)	Bachelor (N=10)	2.0	0-6
	Master (N=31)	3.5	0-7
	Doctor (N=4)	3.0	3-3
Govt./Military (N=35)	Bachelor (N=7)	1.0	0-5
	Master (N=21)	3.0	0-5
	Doctor (N=7)	0.0	0-1

* For the purposes of this table, Employment Sector was based on the choice selected by the organization placing the position for this announcement.

During 1996-1997, industry was seeking masters with a median of 2 years experience, while this year industry is seeking masters with a median of 4 years experience. This may reflect industry's desire to minimize training cost.

Salary & Geographical Location

Ninety-one percent of the employers described the salary range as negotiable or did not specify a salary. Within the 19 positions for which salary was specified, the salaries ranged from a low of \$33,000 to a high of \$100,000 (compared to a range of \$35,000 to \$100,000 last year, and \$30,000 and \$93,000 two years ago). Readers interested in additional details on salary are advised to consult the salary surveys conducted by Sanders (1993) and more recently by Lovvoll (1997), raw data are also available for analysis through the HFES.



Compared with last years survey, this years data indicate decreases in the number of positions announced in the Northwest (- 5), Mid-Central (-4) and East Central regions (- 2). An increase in the number of positions available was noted for all the other regions.

The State of California had a total of 19 positions in the last survey had 34 position announcements this year (please note that the state of California is split in three regions on the HFES job announcement form). The greatest concentration of positions available was in the Northeast with 28 positions (seven more than the 1996-97 survey, and Middle Atlantic (N=25, up nine from last year). The Southeast, which had 18 positions last year, had 23 positions this year. This year 16 positions were located in New England, compared with 6 in 1996-97, 13 in 1995-96 and 3 in 1994-95.

Areas of Expertise & Responsibility

Employers were allowed to specify up to six areas of expertise needed for each position. Because these areas of expertise were not prioritized, it was impossible to assess the primary needs of the employer. Figure 3 specifies the number of requests for a particular expertise. The majority were in the area of HCI, followed by test and evaluation, consumer products, and systems R&D. Industrial ergonomics which ranked third last year slipped to fifth, but had three more positions available this year. As was noted last year, positions indicating a need for expertise in test and evaluation (T&E) often included comments about usability testing of computer based products. Thus, the areas reported are not mutually exclusive. There were 12 areas of expertise requested with less than 11 entries. These were mostly write-ins by employers and were not reported in Figure 3.

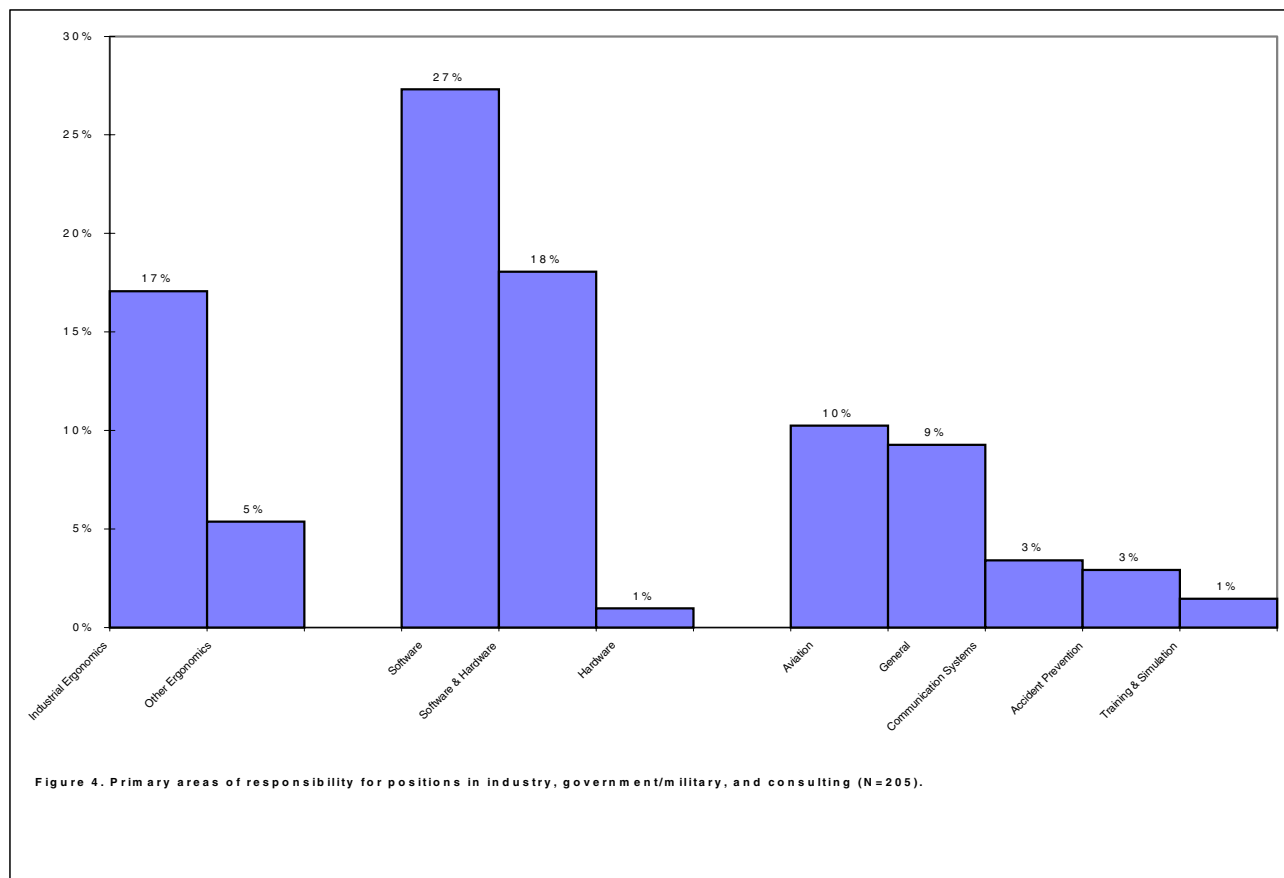
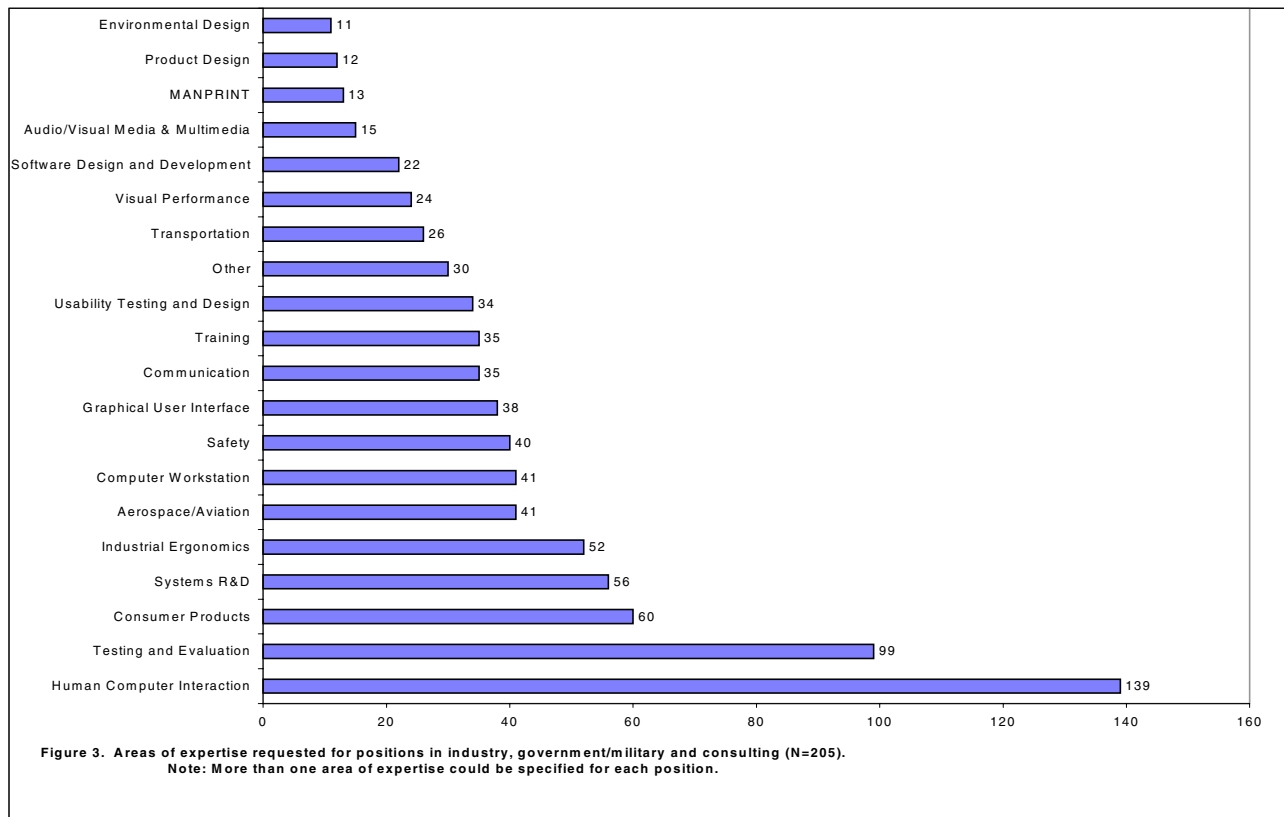
These areas included: individual differences (N=9); organizational design (N=7); medical devices, biomechanics,

visual performance, cognitive systems engineering, graphic design (N=6 for each group); visual basic (N=5); American Disabilities Act and aging (N=3 for each group); human performance (N=2); and medical information systems (N=1).

It was noted that in the 1995-96 survey, environmental design was specified only four times while it was specified 13 times in the 1996-97 and 11 times in the current survey. Similarly MANPRINT was specified six times in the 1995-96 survey, 14 times in the 1996-97 survey, and 13 times in this survey. Apparently these are growth areas, at least for now.

The transportation area appears to be cyclical, with 23 positions in 1994-95, 13 in 1996-97 and 26 in 1997-98. Visual performance showed a similar pattern 22 positions in 1994-95, 14 in 1996-97 and 24 in 1997-98. During these same periods the number of safety positions cycled from 32 to 26 to 40.

Describing the areas of responsibility was more difficult than listing the areas of expertise, for in many cases, the position title was not specified, or general terms such as HFE, ergonomist or manager were used. In addition, terms as different as usability designer, usability specialist, and user interface designer were used to describe positions which required an individual who could develop graphical user interfaces (GUIs). Therefore, the narrative portion of the announcements were reviewed and each position was placed in a single category which reflected the primary area of responsibility for that position (see Figure 4). As in the previous analyses of placement data (Moroney and Adams, 1996; Moroney, Anderson and Soest, 1997, Cummings, Barshay, Lesaigle, & Moroney, 1998) most positions (46%) were in the HCI area. The most common openings were for designers with GUI, HCI, or graphics expertise. Twenty-six percent were for human factor specialists in non-HCI areas, down seven percent from last year. Twenty-two percent were for ergonomists (primarily industrial ergonomists), up from 20% last year.



CONCLUSION

The authors hope that they have provided a useful analysis of the placement opportunities available to human factors and ergonomics professionals seeking positions in industry, government/military, and consulting. It is also hoped that these data will influence the educational opportunities provided to HF&E students

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