

The research program must obviously be clear and of a type to attract attention. There is no necessity for a very specific project, nor for a bright single idea. What is needed, and must appear from the presentation, is some originality of the project and novelty of the results to be pursued. Connection with earlier applicant work is not strictly required, but appropriate reference to relevant literature on the subject will show that the project is not without a sound basis.

The budget should also be carefully considered. It is highly probable that the request will be cut, because this is one of the ways used to match requests with funds. Inflating the budget in view of that prospect is common; but if this is done beyond some reasonable

limits, it will be detected with high probability and bring discredit to the project.

Discussion with people who will examine projects is of course very useful, and is also easy in the Facoltà. For CNR it is not as easy; there is no specific service for that and contacts are better taken by personal acquaintance; but this is not very difficult through some professors.

As a conclusion for young Italian researchers: If you feel that your attitude to research deserves it, try and apply. If you do not succeed . . . well, there are several CNR postgraduate fellowships for universities in the United States. Go there and apply to NSF.

Comment

José M. Bernardo

I have found Dr. Trumbo's article to be very informative, and I am sure that it will be very helpful to those submitting their first research grant application. Although most of Trumbo's comments are pretty universal, specific details are bound to differ within countries; at the suggestion of the Editor, I will give some details on the situation in Spain. Due to the present drive of the European community toward common scientific policies, I would expect Spanish policies to be fairly similar to those in other European countries.

1. POSTGRADUATE GRANT SYSTEM

The Comisión Interministerial de Ciencia y Tecnología (CICYT) publishes research grants every year that allow young graduates to work toward a Ph.D., and young doctorates to pursue their line of research, in the country of their choice. Spanish nationality is required; applications are typically submitted by fall to Servicio de Formación de Personal Investigador, Ministerio de Educación y Ciencia, Serrano 150, 28006 Madrid, from where application forms may be obtained.

Those grants cover return flight, tuition when appropriate, health insurance and about US\$1300 monthly, depending on the destination country. The

José M. Bernardo is personal adviser to the President of the State of Valencia and is on leave of absence from his position as Professor at the University of Valencia. His mailing address is: Presidencia de la Generalitat, Departamento de Estadística, Caballeros 2, E-46001, Valencia, Spain.

basic paperwork requires a short 2-page vita, a 1000-word summary of the research project, a description of the reasons why the candidate has chosen a particular research center, proof of command of the relevant language and three reference letters to be directly sent by the referees chosen by the candidate to the grants office.

Several state governments (Andalucía, Catalunya, Euskadi, Valencia) offer similar, alternative programs for those working within their territory.

2. RESEARCH PROJECTS

The Ministerio de Educación y Ciencia also provides funding for research projects very much along the lines of the NSF grants discussed in the paper. They are designed to promote quality research in any field, although specific topics designated in the National Research Plan get extra funding.

Research projects often span 3 years, and must be submitted by someone working in a nonprofit research center (typically universities and administration), but do not require Spanish nationality.

Applications are submitted by fall to the Dirección General de Política Científica, Serrano 150, 28006 Madrid, from where the appropriate forms may be obtained. As with NSF, projects may be personal or involve a group; the discussion in the paper on the relative merits of both alternatives is fully relevant.

The basic paperwork consists of a summary of the research project, which should be prepared along the lines discussed in the paper, and a detailed vita in a rather specific normalized format. As with NSF, the

project is judged by a peer system, often involving non-Spanish referees. Approved budgets typically run about US\$3000 per person a year, plus justified small equipment and/or computing expenses.

3. INTERNATIONAL COLLABORATION

CICYT also runs a project designed to bring qualified researchers to work in Spain for a limited period of time. Paperwork is initiated in Spain by the center issuing the invitation and requires a short summary of the research project and a vita of the candidate. Special arrangements exist when the visitor is on sabbatical leave.

Spain has bilateral agreements on scientific and technical collaboration with very many countries, including all those in the European community and most Latin American countries. The agreement with the United States was discontinued because of a lack of understanding on defense matters, but it is expected to be resumed next year. Those programs consist of bilateral research projects and provide funding for trips and per diem (typically twice a year in each direction) for about 3 years. Specific information may be obtained from the Subdirección General de Cooperación Internacional, Paseo del Prado 28, 28014 Madrid or from the Spanish embassies in the countries concerned.

Comment

N. Flourney

Congratulations to Professor Trumbo for this exposé of the National Science Foundation's (NSF) Program in Statistics and Probability and his advice to the young statistical scientist who is considering whether or not to submit a grant application. Trumbo has effectively organized a miscellany of details that are important, often critical, to the managers of grant applications at funding agencies and to the reviewers, and thereby to the applicant. We have here a valuable resource document. It only covers one funding agency in one country and it is directed toward the special group of young researchers, but it is a beginning. For Trumbo calls our attention to the fact that his description of the status quo is not a defense of it. Yet the first step in organizing to change the status quo is to understand it, and Trumbo's article is useful to the entire statistical community in this regard. Many topics he covers invite peripheral discussion and analysis and I have selected only a few for further discourse.

Trumbo's paper provides cogent instruction for his selected audience of individual young researchers and it contains some information for others. However, I trust that it will also provoke. I sense an agitation,

involving our professional identity and the resources available for our work, rising among the broad community of statistical scientists that can only succeed with a cohesive thoughtful community effort. Trumbo contributes information concerning the status quo that can be used to our advantage, as I shall discuss later. I firmly believe that the health of our field depends on a farsighted, broadly defined, well articulated and disseminated vision of what is engaging us and its significance.

The first point that Trumbo makes is that the competition for funds is keen. He then deals with ways in which the young statistician can optimize her or his chances of successfully competing for an award. I reiterate: the National Science Foundation's (NSF) budget for research in statistics and probability is approximately 7 million dollars. Before my term as a rotating Program Director at NSF, I was Director of Clinical Statistics at the Fred Hutchinson Cancer Research Center in Seattle, Washington with an annual operating budget on the order of \$700,000. I want to emphasize the point that the national budget for the basic sciences of statistics and probability is a mere 10 times greater than a single budget for statistical support services at a single research institution. It is unequivocal that existing funding levels are inadequate to preserve the vitality of the statistical research community at this time of expanding societal and industrial need for statistical knowledge, help and innovation. However, I believe that we bear the responsibility for improving our resources, that we have the opportunities to do so and that others will not do it for us.

N. Flourney is Associate Professor, Department of Mathematics and Statistics, American University, 4400 Massachusetts Avenue, N.W., Washington, D. C. 20016. During the academic years 1986-1988, she was a Program Director at the United States National Science Foundation handling grant applications in Statistics.