THE GRANTS PROGRAM OF THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

EVALUATION REPORT
APRIL 1999

Presented to:

The Governing Board of the
Grants Program of the AERA

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Executive Summary

Midway through its third grant cycle, the Grants Program of the American Educational Research Association has **demonstrated significant accomplishments in enhancing individual educational researchers abilities to use nationally representative, large-scale data bases in their research.**

Recipients of research grants from the AERA Grants Program report that they have:

- developed valued skills and knowledge,
- disseminated their grant research through substantial conference presentations (an average of 2 each) and publications (an average of 1.5 to 2 each) in a wide and diverse array of professional and disciplinary contexts, and
- largely persisted in career pathways that feature policy-related analyses of national educational data sets, across career domains of research, mentoring, and consulting.

Most participants in the Grants Program Institutes on Statistical Analysis for Education Policy:

- have enhanced their knowledge, skills, and interests regarding analyses of federal education data sets, and
- some have used their training in continued research, publications, teaching, and consulting on policy-related analyses of national data sets.

Moreover, participants in both the research and statistical analyses components of the Grants Program have been diverse, in terms of demographics, disciplinary background, and professional work context. Most reported highly favorably on the quality and meaningfulness of their program experience, citing benefits such as financial support, gaining valued knowledge about and access to national data bases and expertise, and having opportunities for professional development and career enhancement.

Midway through its third grant cycle, the AERA Grants Program has **contributed to the development of a strong, visible infrastructure promoting and supporting policy- and practice-relevant educational research with national data bases. Continued efforts in this domain are recommended.**

- NCES and NSF staff perceive that the Grants Program particularly the dissertation grants has contributed to the increase in the use of NCES data bases over the last decade.
- Neither federal staff nor Grants Program participants reported notable networking benefits of the program, especially between researchers and the federal policy community.
- The Grants Program is heading in the right direction in promoting educational research of potential policy and practice significance, primarily by building the capacity of individual researchers and institutions and by enabling research with the potential to infuse critical issues into policy conversations.
- With its ambassadorial promotion of educational research involving NCES data bases, the AERA Grants Program meaningfully contributes to the central mission of the NCES to collect, analyze, and disseminate information about the nation s educational system. The program is also well connected to NSF s mission of capacity building within the educational research community, but less well connected to NSF s substantive mission of strengthening math and science education through high quality, problem-oriented research.

The following recommendations are derived from all data sources in this evaluation.

1. The AERA Grants Program can continue to help increase the amount and scope of educational research with national data bases by further extending its reach to related disciplines and fields. More active advertising in other professional newsletters and at other professional conferences is encouraged.

2. Past participants in the program s statistical institutes had a number of specific suggestions for improvement, a major theme of is the need for additional help and consultation, both during and as follow-up to the institute.

3. As the heart and soul of the Grants Program, the small grants competition should clearly be maintained. The Governing Board may want to consider adding a targeted post-doctoral strand to this program, specifically to enable young scholars to consolidate their analytic skills and interests in national policy-relevant educational research.

4. Relatedly, the Governing Board is encouraged to pursue the pipeline problem of insufficient numbers of young scholars showing career interest in national data base educational research via (a) a Think Tank or other modest data gathering endeavor to better understand the problem, followed by (b) a programmatic collaboration with the Spencer Foundation or other institution similarly committed to quality education and educational research.

5. The influence of the current program components both on individuals and on the infrastructure of support and advocacy for data base research can be stronger and more durable with increased attention to networking. Networking here refers to building and nurturing relationships among researchers and with government scientists around their common commitment to high quality, nationally-relevant educational research. This was perhaps the most frequently offered recommendation across all components of this evaluation, and many specific creative ideas were offered.

6. A stronger network will enhance the visibility of national data base educational research. Existing program components can be extended in other ways in order to enhance visibility, including:
   - Organize a working session with grantees and government scientists, in which grantees could both present their findings and give specific feedback to NCES/NSF staff on data base quality and usability.
   - Organize and publicize annual sessions at AERA, and other relevant professional conferences, for showcasing the work of the small grantees and fellows.
   - Place all of the grantees research reports on the web, enabling broader reach and increased visibility.
   - Periodically, produce an edited book featuring some or all of the grantees and fellows work. Editors should be prestigious scholars, policy makers, or both, for example, co-editors could be Rich Shavelson and Larry Suter.

7. If existing program components, particularly the research grants and the institute, are expanded in some of the ways recommended, program resources will need to be expanded or reallocated. One possible source for reallocation is the fellows component. With its mixed record of success, it is not contributing to program goals at the same cost-effective level as other components.

The fellows component might be reframed, for example. Teams of senior and junior fellows might be recruited to work on specific policy- or practice-related problems for 6-18 months, like the new NCES Commissioner Fellows. Or, fellows might lead an Academy, in which a group of researchers and government scientists would work for 12-18 months on an identified policy- or practice-relevant issue. A variety of structures and tasks for these fellowships may well be most responsive to program goals.

8. Finally, the chasm between producing research and having that research impact policy and practice is widespread. The AERA Grants Program can be a stronger player in advancing the policy- and practice-relevance of educational research, including its relevance to the priorities of NSF. Strategic networking and enhanced visibility will work toward relevance, as researchers, policy makers, and practitioners inform each other about contemporary issues and problems in the field. In addition, the Governing Board can consider the wisdom of extending the Grants Program to include (a) other national or even regional data bases, beyond NCES and NSF, and (b) multiple or mixed method research which combines data base analysis with another methodology that could include the collection of new data. These extensions may better represent the contextual and programmatic aspects of NSF priorities (for example, the quality of specific math and science programs and specific systemic reforms), may offer greater policy- and practice-relevance for more researchers, and may thereby generate more relevant and timely research.

THE GRANTS PROGRAM OF THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION

EVALUATION REPORT
APRIL 1999

The Grants Program of the American Educational Research Association (AERA) is an innovative initiative envisioned to advance quality research on critical educational issues. The program is intended to enhance the capability of the US educational research community to use nationally representative, large-scale data sets to conduct high quality research relevant to educational policy and practice, and to strengthen communications between the educational research community and federal government social scientists and administrators. The program is designed to enhance the analytic skills and policy understanding of individual researchers, to build an infrastructure of support and visibility for large-scale statistical analyses of national educational data sets, and, specifically, to stimulate such research on science and math education and other priorities of the federal agency funders. These funders are currently the National Center for Education Statistics, (NCES), the National Science Foundation (NSF), and the Office of Educational Research and Improvement (OERI). The AERA Grants Program began in 1990 and is now in its third grant cycle (1996-2000).

Historically and substantively, the core of the AERA Grants Program has had three components: (1) a field-initiated small grants competition, offered for research studies and, beginning in 1993, also for dissertation studies; (2) annual training institutes on research that addresses policy- and practice-relevant questions via analyses of federal data sets; and (3) the placement of junior and senior fellows for 9 to 18 months at one of the federal partner agencies for purposes of collaborative learning and research. Beginning with the second grant in 1992, three additional program components were established in response to NCES and NSF s request to expand grant activities: (4) an evaluation fellowship program, which became an evaluation doctoral training program in the third

grant, intended to increase the number of persons qualified to conduct evaluations of science and math education programs; (5) a Think Tank that engages top scholars in short-term strategic analysis and planning on pressing educational issues; and (6) an Academy that engages top scholars in longer-term analyses of critical problem areas associated with national educational policy.

The Grants Program s volunteer board and administrator[1] have regularly monitored and periodically evaluated the program. Most recently, former board member Rodney Reed synthesized program documents and records for an NSF Program Effectiveness Review in November 1997. This presentation documented, among other program outcomes, more than 80 publications developed from the small grants funding and more than 30 doctoral dissertations completed with program support.

The present evaluation was undertaken to the address the needs of federal funders and the board for comprehensive, credible, external information on the program quality and outcomes of the Grants Program. The evaluation concentrated on assessing the degree to which and the ways in which the core program components the small grants, training, and fellows components fulfilled program goals. The primary evaluation questions addressed were*: How well has the AERA Grants Program served to enhance the capacity of the US educational research community to use large-scale federal data bases to conduct high quality, policy- and practice-relevant research, particularly in the domains of math and science education? What changes, if any, in the program s model or future directions are needed to strengthen and improve program quality and impact?* The evaluation was conducted between May 1998 and January 1999. This report presents the evaluation findings. The evaluation methods are documented in Appendix II.

Program Quality and Impact

This evaluation assessed the AERA Grants Program at two main levels. Program experiences and outcomes for *individual researchers* as program participants constituted

[1] Appendix I presents the members of the current program board and administration.

the first level. The nature and extent of the *infrastructure* that exists within the educational research community to support relevant and visible research with federal data bases constituted the second level. Evaluation findings for each level are reported herein. All supporting tables are presented in Appendix III. Appendix IV presents tabulations of additional evaluation results. Appendix V presents a snapshot of the Evaluation Training Program, developed from brief student and faculty interviews in November 1998.

From the Perspective of the Educational Researcher as an Individual

The core components of the Grants Program are significantly directed to individual educational researchers. Which researchers are being reached by this program, these individuals program experiences, and the program s short- and longer-term impacts on them are therefore important strands of this evaluation.

The AERA Grants Program has attracted a diverse array of researchers interested in contemporary educational issues.

The AERA Grants Program has attracted a diverse array of researchers. From the survey data,[2] half of the research grantees (50%) and nearly three-fourths (73%) of the institute attendees who responded obtained doctoral degrees in education (see Tables 1 and 2). Another one-fourth (23%) of the research grantee respondents are sociologists and 5-10 percent each are economists, quantitative methodologists, psychologists, and others. Among the remaining institute participant respondents, between 2 and 9 percent each obtained doctorates in sociology, economics, quantitative methods, psychology, and other fields. Currently, almost three-fourths (74%) of the research grantee respondents are students or faculty in the academy, and most of the remainder (21%) are researchers or analysts in other sites. Among the institute respondents, 65 percent are university students or faculty, 19 percent are researchers or analysts in other sites, 14 percent work as administrators or school teachers, and 2 percent are unemployed.

[2] 98 of 119 (82.4%) of the small grant recipients responded to their survey, and 113 of 160 (70.6%) of the Institute participants responded to their survey. See Tables 24 and 25 in Appendix IV for response rate details. Survey percents reported herein represent percent of non-missing responses.

Demographically, close to three-fourths of the research grantees who responded (71%) are between the ages of 30 and 50, and a similar proportion (75%) characterized themselves as beginning, established-but-still-young, or mid-career professionals. Half are men (51%) and half women (49%). Three-fourths (75%) described themselves as Caucasian, 14 percent as Asian or Asian American, and 6 percent each as African American and Hispanic (including Puerto Rican and Mexican American). The demographic profile of the institute participants who responded is similar: 66 percent between the ages of 30 and 50; 44 percent women; 62 percent Caucasian, 14 percent each African American and Asian, 8 percent Hispanic, and 2 percent other.

Of the small grant respondents, 29 (30%) reported they had also attended a statistical institute, fairly evenly spread across the years 1991 to 1998. And 61 (62%) reported they had completed their research grant project at the time of the survey (fall 1998). Tables 1 and 2 present additional descriptive information about the small grant and institute participants, including separate data for the dissertation (n=39) and research (n=58) grantees. (Throughout this report, if results are not disaggregated for dissertation and research grantees, this means there were no important differences in these two groups.)

There are 10 senior and 20 junior fellows who have participated in the AERA Grants Program to date. From available data, one of the senior fellows is a black woman, the remainder are white men. However, about half of the junior fellows have been women, and at least 4 have been black and 2 Asian.

Participants in the small grants and statistical institute program components offered highly favorable reports of the quality of their program experiences. Factors importantly contributing to program quality include financial support and flexibility, access to national data sets and expertise, increased knowledge about national data sets, and opportunities for career enhancement, professional development, and networking.

Small grants program. The recipients of small research grants who responded to the survey reported overwhelmingly positive program experiences (Table 3). Nearly all respondents rated the program s overall quality and its overall value and usefulness as good or excellent; a full 70 percent rated the program s value and usefulness as excellent. Over half rated most aspects of the program s application and review processes as excellent, and over 90 percent rated them as good or excellent. Eighty percent or more of the respondents rated the small grant financing, data set access and interaction, and computer facilities at their home institution as good or excellent. Only the availability of data set and statistical experts as consultants received noticeably lower ratings. One-fourth of these ratings were poor or adequate, while 21 percent and 35 percent, respectively, were not relevant, suggesting the grantees themselves had the requisite data set and statistical expertise.

Grantees, both in the individual interviews[3] and on the survey, generated the following reasons, among others (Table 4), for these strongly favorable reports of program quality.[4]

- The grant offered important financial benefits, notably, release from regular duties with time to attend to one s own research or dissertation.
- The grant was efficiently administered; all contact people were helpful and supportive.
- The grant offered access to important national data sets and knowledgeable experts.
- The grant provided significant career enhancement, for example, in establishing research credentials, attracting future research funding, and advancing research productivity.
- The grant enabled important professional development, including having the autonomy to pursue a new area of research interest; learning about methodology, using national data sets, and dealing with bureaucrats; and enhancing confidence in my ability to wrangle large data sets.
- And the grant supported pursuit of policy-related, substantive topics of importance to grantees, for example, the grant provided the opportunity to inform a policy debate

[3] Six grantees, two dissertation and four research, were interviewed at AERA 98.
[4] Nearly all (90-95%) of these open-ended comments from both the survey and the interviews were favorable or positive. Only a handful were negative.

> that is of national significance and afforded me the opportunity to research a critical area regarding the education of Black youth.

Small grant recipient respondents corroborated some of these same reasons when asked why they had applied for an AERA grant (Table 5). Close to 90 percent responded agree or strongly agree to reasons related to financial support and flexibility (items a,h,l), to the value of working with a particular national data set (item d), and to the career enhancement benefits of large-scale data set research (item b). The remaining six items in this question set formed a unidimensional scale assessing beliefs that research with large national educational data sets offers the best vehicle for meaningful contributions to educational policy and practice. While the modal response for most of these items was agree, the responses showed considerable dispersion (standard deviations near 1.0) and an overall mean of 3.5, or halfway between conveying uncertainty and agreement that large-scale national data set research is best for informing educational policy and practice.[5]

Statistical institutes. Evaluations of the AERA Grants Program s statistical institutes conducted at the end of each institute have been consistently and strongly positive.[6] Participants evaluations of institute quality after some time has passed are also positive overall (Table 6). Eighty percent or more of the survey respondents rated their institute s overall quality, financial support, statistical information, and instructional resources as good or excellent. Close to two-thirds rated all other aspects of institute quality as good or excellent, and no more than 9 percent (10 respondents) rated any institute aspect as poor.

Survey respondents offered the following reasons, among others, for these ratings across time (Table 7). Reasons for both positive (+) and negative (—) ratings are listed.

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[5] Several respondents appropriately commented that the phrasing of these items with superlatives (as in best and most) was an error in survey design that probably led to (a) somewhat lower scores and (b) more inconsistency across respondents than would have been generated without the superlatives.

[6] Specifically, positive evaluations were given of the institute teachers, directors, content, coverage and work environment for each year of the institute, 1991-1998. In each year, it was noted that having the registration fee and per diem expenses covered by AERA was very important to the attendees. Most respondents were also in favor of AERA offering advanced statistical institutes on the material that was covered in their institute.

(Of the 172 reasons offered, 70% were positive, 22% negative, and the valence of the remainder unclear.)

- + The institute offered superb instruction and good opportunities for hands-on work.

— The data set and method were not coordinated, the instruction was poor or too technical, there was insufficient hands-on work.

- + The institute content was well chosen, very helpful, presented in considerable detail.

— The institute content was not useful, not presented in enough depth.

- + From the institute, I learned about, gained access to, and have been able to use national educational data bases in research.

— I have not had the opportunity to use the training or data bases presented in the institute.

- + The institute generated ideas for future research and enabled research projects and publications using national data bases.

- + From the institute, I learned new skills, improved my research qualifications, learned how to use the data set, gained an understanding of methodological issues and exposure to new statistical methods, and gained insights into granting agencies.

- + The institute offered opportunities for networking with other researchers and with instructors and experts.

When asked for their opinions on given reasons for institute participation, most survey respondents agreed or strongly agreed that, given statistical advances, large-scale national data set research is more accessible to researchers (76%) and potentially career-enhancing (87%). Eighty-five percent also agreed or strongly agreed that educational researchers primary responsibility is to conduct research that directly contributes to policy and practice. With respect to the 6-item scale assessing beliefs that large-scale national data set research can best inform policy and practice, institute participants conveyed somewhat less agreement than the research grantees. Institute respondents overall mean on this scale was 3.0, indicating an average stance of uncertainty (Table 8).

Staff from the Grants Program s federal agency partners, NCES and NSF, have had mixed experiences with the program s junior and senior fellows.

Past feedback from Grants Program fellows has been generally positive. One senior AERA fellow described the experience as uncommonly valuable, particularly for the opportunity it afforded to rebuild a network of connections with congressional and executive branch officials in education. Past fellows negative feedback about their experience has often been logistical, including the difficulties of moving to Washington for a year and inadequate computer support. From the perspective of most federal agency staff interviewees,[7] the success of the fellows has been highly dependent on the individual. Successful fellows:

- come with the requisite experience and training to take advantage of agency resources and opportunities and actually do so;
- are assertive enough to make the experience work for him/herself;
- are energetic, bright, easy to work with, and productive;
- get integrated into the agency s work and staff;
- help the organization grow, through seminars, projects, feedback on agency work, and targeted user feedback on specific surveys and data bases; and
- continue data base work after they leave, serving as an ambassador for NCES out in the field.

Barriers to successful fellows, from the agency s view, include:

- insufficient staff time for mentoring junior fellows, particularly at NSF;
- the pre-established research agendas of some (usually senior) fellows, whose project work is therefore not connected to the ongoing work of the agency; and
- the difficulties of engaging fellows with staff in collaborative work, as the workplace culture does not support this, as work with fellows invokes risks of not fulfilling other responsibilities, and as one year is usually not long enough to establish effective working relationships.

[7] 8 NCES, 6 NSF, 2 OERI, and 2 AERA central office staff were personally interviewed in Washington DC in the fall of 1998.

A number of staff reported that their experiences with junior fellows have been more positive than their experiences with senior fellows. Several commented that allocating the same money to dissertation grantees would go a lot farther and generate more products, that often the fellows experience benefits the person but not the agency. Yet, in a recent development, the NCES Commissioner has recruited Commissioner Fellows, who are highly prestigious scholars in the field, called in to work on a specific NCES problem, for example, comparing 4th and 8th grade cohorts tested four years apart but comprising different national samples. This may perhaps be a strong model for senior fellows, whereby the benefits are more reciprocal.

From their project experience, recipients of small grants from the AERA Grants Program have developed valued skills and knowledge, disseminated their work through substantial conference presentations and publications, and largely persisted in career pathways that feature policy-relevant analyses of national educational data sets.

Skills and knowledge gained. Several interviewees commented that the AERA grant experience, often in conjunction with attendance at an NCES training seminar, gave them valuable knowledge about federal educational data sets. Small grant survey respondents overwhelmingly agreed or strongly agreed that their grant experience strengthened valued knowledge or skills, confidence in their own ability to conduct large-scale data set research, interest in conducting such research, as well as understanding of what makes research relevant to policy or practice (Table 9).

Presentations at conferences. At the time of the survey, 74 (76%) of the small grant respondents reported that they had used[8] their small grant experience to give a presentation at an international, national, or regional conference (Table 10, item a). Of these, 65 reported the number of presentations they had given: 22 had given two presentations; 14 each had given one, three, and four-seven presentations; and 1 had given ten presentations (a total of 188 presentations, or 125 omitting extreme scores). An

[8] Use was defined to mean that the research experience contributed significantly, although not necessarily exclusively to the activity.

additional 16 respondents (5 research and 11 dissertation grantees) reported that they were working on or intended to begin work on a conference presentation. Not surprisingly, more research grantees (50 or 85%) than dissertation grantees (24 or 62%) reported giving a presentation at a conference. This trend was also found for reported publications (articles, chapters, and books), as discussed below.

These survey results on presentations were corroborated by three additional sources of information. First, one-half of the small grant interviewees voluntarily reported that they had presented a conference paper based on their project research, one at the American Economics Association, one at AERA, and one at the Association for Institutional Research. Second, an analysis of the curriculum vitas returned by survey respondents[9] yielded a listing of 107 conference presentations, shown in Table 11. Third, Table 11 also tabulates the 112 survey responses to the question, at which conferences did you present? The two sets of results in Table 11 show considerable consistency. Further, the survey results above suggest that grant recipients have presented an average of 2-3 conference presentations based on their grant research. Both the vita analysis and the survey results in Table 11 suggest an average close to 2. So, the best estimate from all available sources is that AERA small grant recipients have given an average of two presentations at professional conferences on their project research. Moreover, the range of disciplines, problem areas, and geographic regions represented by the over 50 different conferences listed in Table 11 indicate a wide and dispersed program dissemination effect.

Publications. Survey respondents reports of publications generated from their small grant research are similarly positive and reasonably consistent (Table 10, items b,c,d, and Table 12).

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[9] All small grant recipients were asked to return a copy of their vita with grant-related activities highlighted. 71 of the 98 respondents returned vitas (43 research grantees and 28 dissertation grantees). Of these, 52 (31 research and 21 dissertation) had highlighted grant-related activities. Of the remaining 19 vitas, all but 2 (both dissertation grantees) had lists of presentations and publications, but we were not able to discern which were grant-related. Given that we did not count these, the estimates in this report are clearly conservative. Moreover, there were 15 additional unpublished papers listed on the vitas as grant-related, and one of the presentations listed won an AERA award.

- *Refereed articles:* Forty (42%, 30 research and 10 dissertation) reported publishing an article in a refereed journal; 48 more (50%, 24 research and 24 dissertation) reported that they were working on or intending to publish such an article. Of the 34 who reported the number of articles published, 17 published one article, 12 published two articles, and 5 published three-ten articles (for a total of 70 articles and an average of 2.1, or 1.6 omitting the two extreme scores).
- *Chapters in books:* Twenty-one (21%, 16 research and 5 dissertation) reported publishing a chapter in a book; 19 more (20%, 11 research and 8 dissertation) reported that they were working on or intending to publish a book chapter. Of the 17 who reported the number of chapters published, 12 reported one chapter and 5 reported two chapters.
- *Books:* Five (5%, 4 research and 1 dissertation) reported publishing a book based on their project research; 11 more (5 research and 6 dissertation) reported that they were working on or intending to publish a book.

Once again, some corroboration and elaboration of these survey data are available from other data sources, namely, the document reviews and the open-ended responses on the survey. Table 12 lists the journals in which grant recipients have published project-related articles from 1990-present, as reported to and listed by the program, supplemented by the vitas. Again, the journals that survey respondents listed in response to in which journals have you published? are also tabulated in Table 12. [10] From these data, estimates of the total number of articles published by grant recipients are 62 and 84, which clearly bracket and thereby support the estimate of 70 above. Estimates of the average number of articles published by grant recipients are 1.6 and 1.8 for the program and survey lists, respectively, again supporting the estimate of 1.6 above. Like the conference presentations, the considerable range and diversity of these journal lists attest to the cross-disciplinary scope of program reach and impact.

[10] Of the 56 journals in Table 12, 32 (57%) are common to both the program-plus-vita list and the survey list.

With respect to book chapters and books, the program list, supplemented by the vitas, shows 15 book chapters written by small grant recipients (a lower estimate than the survey response of 22), and another 9 written by fellows and evaluation trainees, for a total of 24. These are published in books about education (11), the sociology of education (5), research methodology (4), math and science (2), economics (1), and literacy (1). The program list plus vitas has 5 books written by small grant recipients (the same number as the survey). Another 14 books have been written by AERA fellows, for a total of 19. These include 1 in education, 2 in sociology, 2 in math and science, 1 in economics, 12 NCES reports, and 1 NSF report.

Career pathways. To what extent and in what ways have AERA small grant recipients continued to pursue policy- and practice-relevant educational research with national data sets as part of their professional career? The data available from this evaluation suggest that most small grant recipients have continued to pursue analyses of national educational data bases in their research, teaching, and consulting; that many believe that a key rationale underlying this work is its significance for policy; and that the AERA grants program has contributed to persistence of this career pathway, in some pivotal ways.

- Data from several sources converge to substantiate the finding that *most small grant recipients continue to use national data bases for research on educational issues*.
  - ◊ All six of the interviewees reported that they had used large data sets prior to their AERA grants and that they are continuing to center their research efforts around the analyses of national educational data sets. All six also highlighted the policy relevance of this research as key to their own motivations. One said, for example, that large data sets are critical to her own interests in racial and ethnic minorities because many data sets oversample minorities. Two others underscored the macro, big picture portrayal uniquely offered by national data sets.
  - ◊ On the survey, 74 (78%) reported that they have been using large-scale national data sets in their research since their AERA grant. In addition, a total of 26 respondents said they had written successful proposals for further large-scale data set research

(Table 10, items e,f). Thirteen had written successful proposals for research both in the same area as their AERA grant and in a different area. The proposals of 7 were for research in the same area, and for another 6, for research in a different area.

◊ From the program Awardee Updates, 10 of 11 who responded to the update for 1995 awardees and 20 of 27 who responded to the 1997 awardee update reported using an NCES data base since receiving their award. Five of these are the same awardees, so the totals for these two years are 25 of 33, or 76 percent. The comments received on these updates were very positive regarding the lasting effect of the grant on the awardees work.

- The small grant recipient survey results indicate that among those for whom it is relevant, from *one-third to three-quarters have featured analyses of national educational data bases in their teaching and consultation* (Table 10, items g-k).
  - ◊ Thirty-seven percent have revised their teaching to incorporate instruction in large-scale data set research, and 46 percent have attracted new graduate students as mentees in large-scale data set research.
  - ◊ Thirty-eight percent have presented workshops or seminars and 72 percent have provided consultation on educational research with national data sets.
- Again from multiple sources, these evaluation results converge to substantiate the finding that *the overall career pathways of small grant recipients significantly feature policy-relevant analyses of national educational data sets.*
  - ◊ On the survey, small grant respondents reported they spent an average of 30 percent of their time on large-scale data base work before their AERA grant and an average of 50 percent after their grant. Moreover, 72 (76%) reported that time spent on large-scale data base work increased from before to after their grant, 10 (10%) reported their time decreased, and 12 (13%) reported their time stayed the same (Table 13A). Disaggregation of these results by dissertation and research grantees reveals that most of this increase in time allocated to data base work was reported by the dissertation grantees (Tables 13B and 13C). This perhaps signals

their completion of graduate studies and subsequent entry into the workforce, with an accompanying shift from diverse to more focused work tasks. It may also signal the important influence of the grants experience on these young scholars.

◊ On one career-related question on the survey (Table 14), 35 percent of the small grant respondents reported that their grant experience helped me initiate a line of research using large-scale data bases, and 47 percent reported their grant experience was part of an already established line of research I was conducting using large-scale data bases. On a second question, 98 percent reported that their grant experience primarily confirmed (38%) or primarily enhanced (60%) their beliefs in the value of large-scale data set research. On a third question, 93 percent reported that the AERA grant experience primarily confirmed (65%) or modestly altered (28%) their career path and direction. At least 5 of the remaining 7 respondents who reported the grants experience substantially changed their career path offered comments indicating that the change for them was in the direction of more frequent, more committed, or more extensive use of national data sets for their future research. I am now certain I will use large-scale data sets for future research is one such comment.

Again, disaggregating these results by dissertation and research grantees revealed that the influence of the grants program experience was indeed stronger for the dissertation grantees compared to the research grantees (Table 14). Forty-one percent of the former reported that the grants program helped me initiate a line of research using large-scale data bases and fully 70 percent said the grants experience primarily enhanced my beliefs in the value of large-scale data set research.

◊ The vitas received by small grant recipients were also analyzed for career path information. Among the 43 research grantees with vitas, 38 (88%) are definitely still using large data sets in their career, 3 (7%) may be doing so, and only 2 (5%) are

definitely not still using large data sets in their career.[11] Among the 28 dissertation grantees, 19 (68%) are definitely still using large data sets in their career, 3 (11%) may be, and 6 (21%) are definitely not.[12]

◊ Finally, most of the federal agency staff who were interviewed perceived the small grants to be the heart of the AERA Grants Program. The dissertation grants are perceived as especially valuable because they are highly cost-effective, but more importantly because they attract and train young scholars, guiding them early in their career on pathways of large-scale data set research.

Most participants in the AERA Institutes on Statistical Analysis of Education Policy enhanced their knowledge, skills, and interests regarding analyses of federal education data sets. Some were able to further use their training in continued research and publications, teaching and consulting with others.

Most of the evaluation data relevant to the Grants Program impact on participants in the program s statistical institutes come from the administered survey.

Skills and knowledge gained. Most participants in the statistical institutes agreed or strongly agreed that they gained valued knowledge and skills (85%), that their confidence in their ability to conduct (74%) and their interest in conducting (77%) large-scale data set research was enhanced, and that they furthered their understanding of what makes educational research relevant to policy or practice (67%) (Table 15). One-fourth reported that they had gone on to receive additional training in large-scale data base analysis, and another one-fourth reported that they intended to do this (Table 16, item c).

Presentations at conferences. Thirty (28%) of institute participants who responded to the survey reported that they had used[13] their training to give a presentation at an international, national, or regional conference, and another 34 (31%) reported that they

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[11] Those who definitely are still using large data sets represent 11 of 12 research grantees from the second grant period (1992-95) and 28 of 32 grantees from the third grant period (1996-2000).

[12] Those who definitely are still using large data sets represent 3 of 4 dissertation grantees from the second grant period (1992-95) and 16 of 24 from the third grant period (1996-2000).

[13] Use was defined to mean that the institute experience contributed significantly, although not necessarily exclusively to the activity.

intended to or were working on a conference presentation (Table 16, item d). Of the 30 who had given a presentation:

- 8 gave one presentation;
- 10 gave two presentations;
- 2 gave three presentations;
- 3 gave four presentations;
- 4 gave five presentations; and
- 1 each gave six, eight, and ten presentations.

This totals 90 presentations with an average of 3.0. Without the three extreme scores, the total is 66 conference presentations with an average of 2.4.

When asked to report which conference, 23 respondents named AERA, 3 named American Sociological Association, 2 named the Association for the Study of Higher Education, and 3 named the National Council of Teachers of Mathematics. Other conferences named once each by respondents included nine national or international conferences, and eight regional or local conferences in fields such as teaching, psychology, economics, and institutional research.

Publications. Extant publications based on participants institute experience are modest in number (Table 16, items e,f,g). Ten survey respondents (9%) reported using their institute training to publish an article in a refereed journal, seven (7%) reported publishing a chapter in a book, and 1 reported publishing a book. Interestingly, an additional 46 (43%), 20 (19%), and 16 (16%) reported that they are intending to write or are writing journal articles, books chapters, or books, respectively. Given the short duration of the institute and its specific focus, it is notable that any participants were able to use their training to contribute significantly to a publication.

Career pathways. Some statistical institute participants reported continued use of the data bases and especially the statistical techniques they learned in their institute. About one-fourth (26%) reported that they had conducted further analysis with their institute s data set, and 36 percent reported they had used their institute s statistical techniques in conducting a research project (Table 16, items a,b). Less than 10 percent had written a

successful research proposal for research involving their institute s data set, analysis technique, or both, while 21 percent had garnered funding for large-scale research with different data sets and different analytic techniques (Table 16, item h). Twelve percent reported writing an AERA small grants proposal, and another 28 percent reported they intended to do so (Table 16, item i).

Around one-fifth reported using their institute training in teaching and mentoring, 27 percent reported presenting workshops or seminars and nearly half (48%) reported providing consulting on large-scale data set educational research (Table 16, items j-m).

These data collectively suggest that for a significant fraction (perhaps one-fourth) of the participants in the statistical institutes, their institute experience is an important part of a broader career pathway committed to analyses of national educational data sets.

In sum, the AERA Grants Program has offered high quality research opportunities and statistical training to a diverse array of researchers interested in policy-relevant analyses of national educational data sets. Individuals participating in these program components have benefited through enhanced knowledge, skills, and interests. Research grantees have also disseminated their work fairly extensively through conference presentations and publications, and have largely persisted in career pathways that feature policy-relevant analyses of national educational data sets.

From the Perspective of the Infrastructure Developed to Support National Data Base Educational Research

An infrastructure is a foundation of permanent support for an institution. A strong infrastructure for policy- and practice-relevant educational research with national data sets features high usability and high use of the data sets, an extensive web of networked relationships among researchers and their institutions, clear pathways to research with important relevance for policy and practice, and significant connections to partner agencies. These criteria thus form the framework within which the AERA Grants

Program s contributions to the infrastructure for educational research with national data bases were evaluated.

Staff in partner agencies, NSF and NCES, perceive that the use of national data sets, especially from NCES, in educational research has increased over the past decade and that some of this increase is attributable to the AERA Grants Program, particularly the dissertation grants.

NCES has twenty-some data bases all potentially relevant for educational research. Most of these are available as public use data tapes, which are user-friendly, free, and extensively documented with electronic codebooks and with readily accessible technical help. Although much educational research involving large-scale data bases uses NCES data bases, they remain substantially underused. Promoting greater use of these and other federal data bases and concomitant policy visibility for educational research comprise the core agenda of the Grants Program.

With its different mission, NSF rarely generates large-scale data bases on K-12 education appropriate for public use. Within NSF, the Science Resources Studies (SRS) unit, under the leadership of Jeanne Griffith, does have some publicly available data sets relevant to education, and Jeanne has recently contributed some SRS funds to the AERA Grants Program. Most of the SRS data sets are post-graduate concerning, for example, the science and engineering labor force while much educational research is K-12. Even so, one AERA grants proposal was submitted last year for an SRS data base, and Jeanne hopes for more. It would please me enormously if the AERA grants program stimulated more use of my data bases, she said. This kind of grants program has a long-term pay-off, building users and uses of our data bases and building networks among users. [14]

While lacking hard data, NCES staff have perceived an increase in the research use of their data bases over the last decade or so and an increase in the number of different data bases being used. In the past, the majority of AERA Grants Program proposals were for NELS; now it is about one-third, estimated one NCES staff member. More cross-

sectional (versus longitudinal) data bases are also being used. As evidence, staff note increases in the number of AERA presentations and the number of dissertations (from a search of Dissertation Abstracts) involving NCES data bases, in the number of calls they get requesting information or help, and in the number of proposals they review for the AERA Grants Program. At the same time, most NSF and NCES staff would like to see continued increases in the use of federal data sets for educational research. Said one NCES statistician, we will always have data sets that are not fully tapped in terms of their potential for analysis.

Additional evidence of increased use of NCES data bases is provided by the expansion of the small grants component of the Grants Program over time (Table 17). During the first grant period, 9 proposals were funded, 4 (57%) of which involved NELS, and the remainder involved three other data bases. To date in the third grant period, 30 of 68 funded grants (44%) involved NELS, and the rest involved 16 other data bases. Survey respondents reports of the data sets used in their grant are similar (Table 17, last column).

NCES and NSF staff, in fact, attribute some of the increase in the use of federal data bases to the Grants Program, particularly the dissertation grants. While not much money, these grants constitute exciting resources for young scholars. Moreover, young scholars are the researchers of the future. Federal staff said that if young scholars get started early with this kind of quantitative research, they are more likely to continue with it in the future, to encourage and train their own students in it, and to pass along the knowledge and expertise gained in the grants program regarding how to use the data bases appropriately, for example, with the proper weights and considering the assumptions of the data set designers. Appropriate data set use is very important to NCES staff. Dissertation grants also get other faculty involved, although this is a mixed blessing as these other faculty maintain decision authority for the student (and they may not have the requisite knowledge regarding a given data set).

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[14] All quotes are direct quotations from taped staff interviews or very close paraphrases.

The grants, both research and dissertation, get researchers to think carefully about how to justifiably and appropriately use a given data base to address a given question, through the proposal process and the proposal s requirement for policy relevance. The grants are also highly cost-effective, as it would cost many times more to hire an outside contractor for the same research. Finally, the grants generate publications, which in turn stimulate more work with these federal data bases as the data bases get better known.

Agency staff further believe that the statistical institutes also contribute to the increased use of federal data bases for educational research, by providing appropriate and necessary training and by providing information (publicity) about the data bases. The fellows program, with its small size and mixed record of effectiveness, is not viewed as a significant contributor to the perceived increase in federal data base use over recent years.

Other factors, outside the Grants Program, mentioned by staff as contributing to increases in data base use include the availability and marketing of new data sets, NCES training seminars, and the cultivation of relationships with individual researchers.

The Grants Program has not, to date, significantly contributed to the development of a strong network of researchers committed to policy- and practice-relevant educational research with national data bases.

The scope and visibility of policy- and practice-relevant educational research using national data bases can be augmented with a strong research network.[15] Nearly all federal agency interviewees were asked about the networking features of the Grants Program, specifically, the ways in which the program has contributed to building or strengthening a network of researchers interested in federal data base research. Their responses suggest weak results at the individual participant level and no discernible networking results at the infrastructure level. A number of staff highlighted the Evaluation Training Program as a

[15] The importance of a strong network is evident in the success of the AERA Grants Programs Think Tanks (TTs) on TIMMS. As reported by TT participants, one TT result in complete restructuring of the management of TIMMS, and the other rescued the TIMMS curriculum analysis project from an ideological quagmire and offered strong policy legitimacy to the subsequent project findings. The success of both TTs was dependent upon the ability of the AERA Grants Board to gather recognized scholars together in such a short time.

model for cohort and networking development, which, if successful, might be transferred to other program components.

Weak networking benefits at the individual level are corroborated by the surveys, on which small percentages of respondents reported using their program experience to promote data base research in general or to work collaboratively with contacts made during the program. These percentages were especially low (10 to 15%) for the dissertation grantees, even though networking is arguably especially important for beginning scholars. Slightly over half of both the grant and institute respondents did report that, through the program, they had made important contacts with other educational data set researchers, yet somewhat under half of each reported making important contacts with people in the government (Table 18). The potential for a geographically dispersed network among researchers is strong, given the significant number of different institutions (65) represented by the research and dissertation grantees to date (Table 19).

The Grants Program is heading in the right direction in promoting and enabling educational research of potential policy and practice significance, which may, over time, enhance the visibility and policy clout of the educational research community.

When asked about the policy- and practice-relevance of contemporary educational research, most federal agency interview respondents offered some version of, right now, we are far away from being policy relevant. The AERA Grants Program is dedicated to reversing this perception through investments designed to augment the scope and quality of research using federal data bases. Program founders and supporters believe that such research constitutes *a* significant, if not *the* most significant route to policy- and practice-relevance and visibility.

As a small research program, the Grants Program cannot be expected to exert discernible, direct influences on educational policy or practice, agreed all federal agency interviewees. Rather, suggested several, more appropriate visions and expectations for the Grants Program are:

- to contribute to capacity building, through training and promoting quantitative research on important policy issues, using federal data bases;
- to start the conversation about important dimensions or facets of education, to bring these to the attention of policy makers and practitioners through relevant research; and
- over the long term, to contribute to the knowledge base underlying educational policy and practice through high quality research findings.

As one respondent said, the grants have not caught the policy eye, [so the program] is more peripheral, much more resource building, not right out in front where the daily decisions need to be made. Nonetheless, agency staff agreed that overall, the Grants Program is headed in right direction. The institutes help people ask policy questions. And policy relevance is a requirement of the grant proposals.

Federal agency staff, notably at NCES, indicated that to be meaningfully relevant, research projects funded by the Grants Program should:

- address current policy and practice issues, for example, class size and teacher quality;
- address issues that have not been researched to death;
- address questions for which the proposed data set and methodology will yield a strong, defensible answer; and
- generate publications in scholarly and practitioner journals and other media.

Respondents stated that, according to this view, some program grants have been policy/ practice relevant, others less so, and more could be. One NCES staff member suggested that a condition of funding be that the researcher attend an AERA or NCES training seminar.[16]

When asked if program grants funds should be more targeted to specific issues in order to enhance relevance, nearly all respondents replied no. From an NCES staff member, the money we give is not sufficient enough to justify looking for particular types of

[16] From 2-4 NCES training seminars are offered for 3 and 1/2 days each during the summer, serving 60 people at a time, all funded by NCES. Participants work through a complete analysis during the seminar, learning what questions can be asked of particular data sets and how to do the analyses correctly. The NCES seminars are more intensive and practice-oriented, while the Grants Program institutes are more policy-oriented.

research and rejecting others. We *like* that the grants are dispersed over topical areas. We *like* for everyone at NCES to think that their data bases are included. From another, I would like to make sure that the program has the ability to fund the best proposals that come in. It is fine to let the field and these experts [the Board] make these determinations, at least at this current level of funding. If we were asked for more money, we would want more say in what kinds of things the money is spent for.

A content analysis of the available abstracts of research and dissertation grants funded up through 1998 by the Grants Program (n=90) supports the inference that the program is heading in the right direction with respect to promoting educational research on issues relevant to policy and practice (Table 20).[17] This detailed analysis reveals that over one-third of this sample of research projects have addressed issues in math and science education, notably, issues related to student achievement. Examples here include the effects of tracking on student math/science achievement, international achievement comparisons, and math/science achievement for minority and at-risk students. Another one-fourth have focused on educational opportunities, equity of access, achievement and other outcomes in domains other than math and science for minority students and other students at-risk. Examples here include educational attainments for black students and for Latino students, and factors related to minority drop-out rates and to successful minority student transition to college. Other domains studied by the Grants Program s funded projects include teacher quality and preparation, resources and institutional structures, and early childhood program processes and outcomes. The specific research projects and their findings within these domains may or may not have significant policy relevance, but this analysis suggests that the *questions being asked* <u>are</u> important issues in contemporary educational discourse and legislation.

With its ambassadorial promotion of educational research involving NCES data bases, the AERA Grants Program meaningfully contributes to the central mission of

NCES to collect, analyze, and disseminate information about the nation s educational system. The program is also well connected to NSF s mission of capacity building within the educational research community, but less well connected to NSF s substantive mission of strengthening math and science education through high quality, problem-oriented research.

Respondents in all federal agencies had highly positive views of the Grants Program overall. They perceive it as an important program that is cost-effective and wrapped in quality, given the substantial credentials of the Governing Board and authority of AERA. Staff offered more nuanced responses when asked how well the program is addressing the central missions of their agency.

NSF. The goals of the Grants Program do match important goals of NSF: to build capacity within the educational research community to conduct high quality, policy- and practice-relevant research via analyses of federal data bases. Capacity building is, in fact, a key priority at NSF today. It encompasses (a) enhancing the prestige of educational research by attracting the best people to the field, including natural scientists;[18] (b) encouraging under-represented minorities to become educational researchers in math and science; and (c) advancing high quality, integrative, problem-oriented research that addresses the complexities and contextualities of important educational problems.[19] Well connected to these NSF priorities, the Grants Program has actually uncovered an important pipeline concern. This concern is the dwindling numbers of educational researchers both established and developing with interests and skills in policy-relevant data base analyses, lamented many interviewees. Although the Grants Program primes the pump by getting young scholars involved in such research early in their career, there

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[17] In this analysis to classify a given grant in a given category, judgment was used when the researcher s intent was not completely clear. For this analysis, complete abstracts were needed; 90 were available (47 research and 43 dissertation).

[18] With mixed views, NSF staff noted the agency trend toward cross-over funding, whereby natural scientists are being encouraged to do educational research, both to provide a sound scientific basis for this research and to provide work for these scientists, as other sources of funding for them dry up.

[19] NSF s new REPP (Research on Education, Policy, and Practice) is designed to promote just such cross-disciplinary, problem-oriented research.

aren t enough young scholars out there. Said one NCES staff member, it s a real challenge. I don t see a pipeline of talent in quantitative educational research.

With respect to specific substantive domains, the Grants Program has not matched NSF priorities as well. These priorities include:

- science and math education assessments of the quality and effectiveness of materials, curricula, and specific NSF program initiatives;
- systemic reform in science and math what works and what doesn t;
- teacher education and inservice in science and math, development of teacher capacity in science and math education;
- technology and its interface with science and math teaching and learning;[20] and
- assessment as it relates to science and math teaching and learning.

To illustrate, NSF staff had hoped the Grants Program would stimulate research on (a) the pipeline problem in science and math, comprehensively tracking and explaining patterns of science and math participation and achievement over time for women and under-represented minorities at all levels of the educational system; (b) models that attract scientists and mathematicians into teaching; (c) patterns of student achievement in various kinds of systemic reforms by various curriculum changes; and (d) intersections of assessment and technology.

But, the Grants Program has not stimulated this kind of research, said one NSF staff member (and see Table 20). I ve given up on this. It s just too hard, I guess, for people to learn enough about our implementation programs to focus a research project on them. In addition, some NSF priorities are not well fulfilled by analyses of existing data bases, because the data bases do not contain the requisite information. NSF staff acknowledged that they have the same problem with their own research competitions. Out of 60 pre-proposals for the REPP funding in the fall of 1998, most were program or curriculum development, only 5-6 were concerned with data and probably none with secondary analysis of existing data sets. Several NSF staff cited the TIMMS data as potentially

[20] NSF s new program in this area is called knowledge and distributed intelligence.

relevant to research involving secondary analysis directly related to selected NSF priorities areas. (From Table 17, five program grants to date have focused on TIMMS, all in the current grant cycle.)

NCES. The mission of the NCES is to collect, analyze, and disseminate information about the nation s educational system. The AERA Grants Program contributes directly to the analysis and dissemination parts of this mission and thereby helps legitimize the nation s investments in educational data bases. The Grants Program gets people interested in the NCES data bases, provides methodological and substantive feedback regarding data base quality and usability, and helps NCES build substantive relationships with researchers. Through these relationships and through the publications generated by program participants, the program helps to build a cadre of ambassadors out there for NCES and for its data sets. I think that is a terrific contribution, said one NCES staff member.

OERI. Newcomers to the Grants Program, OERI staff acknowledged its relevance to the institutes which contribute program funds (the institutes for at risk student and for student achievement). Staff also appreciated the non-bureaucratic, professional organization and procedures of the program s grants competitions.[21]

In sum, the AERA Grants Program has contributed to an infrastructure that advances and supports educational research using federal data bases with important relevance to policy and practice. The program has contributed to increases in national data set use, to research relevant to policy and practice, and to the missions of its federal partners. Continued strengthening of this infrastructure is an agenda for future years of the Grants Program.

[21] This appreciation was noted, particularly in contrast to the cumbersome OERI review process, which has been recently evaluated with numerous recommendations for improvement. It should be noted that as a public institution, OERI must have fair and open review procedures. Moreover, their field-initiated projects are funded for several hundred thousand dollars each, in contrast to the $25,000 maximum for program grants.

Synthesis

The AERA Grants Program is a unique player in the uncrowded arena of field-initiated educational research. It is unique in offering multiple opportunities for professional development and practice, from small research grants and statistical training to federal agency fellowships and high-powered, influential think tanks. It is unique in its primary advancement of policy- and practice-relevant research using national data bases. It is unique in its ambitions to advance the development of *both* individual researchers and the broader infrastructure of support and advocacy for national data base educational research. And it is unique in the hands-on, active role played by its highly prestigious, wholly volunteer Governing Board. With the universally acclaimed competent organization of Jeanie Murdock, the program s administrator, board members not only set policy but actively review grants, mentor grantees, participate in the institutes and think tanks, and enact visible leadership for the program.

At this juncture in its evolution, the AERA Grants Program has made substantial progress toward its goals of enhancing the capacity of the educational research community to conduct research using nationally representative data sets that informs educational policy and practice. This evaluation offers extensive evidence supporting the quality and impact of the program s endeavors at the individual researcher level, and substantial evidence supporting progress at the infrastructure level.

Moreover, the program compares favorably with one of its critical competitors in the field-initiated educational research arena, that of the Spencer Foundation s Postdoctoral Fellowship Program.[22] Data from a recent evaluation of this program by Abt Associates enabled a snapshot comparison with the Grants Program, primarily at the individual researcher level.[23] The Spencer Foundation Postdoctoral Fellowship

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[22] The field-initiated educational research programs at NSF, OERI, and Spencer do not collect the data on grantees that we collected in this evaluation in a manner we could use for comparison purposes. Moreover, there are substantial differences between these programs and the Grants Program in the kinds of research funded and the amounts of the awards, making comparisons less meaningful.

[23] Abt Associates. (May 1997). Follow-up Study of the National Academy of Education/Spencer Foundation Postdoctoral Fellowship Program Final Dissemination Report. Cambridge, MA.

Program awards small grants ($14,000 to $25,000 annually) for research and attendance at National Academy of Education Meetings. About 25-30 fellowships are awarded annually out of 160-200 applications, for an acceptance rate of about 15 percent. Applicants are eligible 0-5 years after receiving their doctorate. The criteria for acceptance include the merit of the individual research proposal and the potential of the applicant to contribute to his/her field or to education. The Abt evaluation covered a period of nine years (1986-1994). They surveyed 252 fellows out of approximately 300, as well as 177 semi-finalists. The response rate for fellows was 83 percent and for semi-finalists, 63 percent. Vitas were received for 155 individuals (36%), both fellows and semi-finalists.

First, for broad comparative purposes, the AERA Grants Program has accepted 75 of 172 research proposals received, for an acceptance rate of 44 percent (and 51 of 104 dissertation proposals received for an acceptance rate of 49%). AERA grants are for a maximum of $25,000 over two years. This evaluation also spanned nine years (1990-98). A total of 117 grantees with usable addresses were surveyed 75 research and 42 dissertation grantees. The response rate for all grantees was 83 percent, for research grantees 79 percent, and for dissertation grantees 93 percent. Vitas were received by 71 individuals (61%); usable vitas by 51 (44%).

Second, for more specific comparative purposes, we identified 23 AERA research grantees who were 0-5 years post-doctorate when they received their AREA grant. These grants were awarded 1994-98. We compared the two groups Spencer and AERA on educational and employment characteristics, but not publications, because of the disparity in opportunity (length of time) to publish and because the Abt evaluation counted all publications, whereas our evaluation counted only those that resulted from the AERA grant award.

- The funding provided to the two groups is comparable.

- The two groups are roughly comparable on discipline of doctoral degree. Education, psychology, and other social sciences account for 88 percent of the Spencer fellows and 95 percent of the AERA grantees (Table 21).
- The AERA grants reach individuals from a wider array of degree-granting institutions (Table 22). Across all Spencer fellows, 55 institutions are represented 25 by one fellow each with the remaining 30 accounting for the other 227 fellows, or 90 percent. Across the 23 AERA research grantees, 20 institutions are represented 16 by one grantee each with the remaining 4 accounting for the other 11 grantees, or 48 percent. The concentration of Spencer fellows from a few institutions was interpreted as capacity or, alternatively, elitism.
- Nearly all individuals in both groups are working in the same field as their doctoral training (90% of Spencer and 97% of the AERA grantees), and nearly all have academic positions (93% of Spencer and 100% of AERA grantees).

Interestingly, the Foundation and the Spencer fellows underscored the critical timing of these awards. The Foundation invests in scholars early in their career in significant measure to facilitate the scholars early development and use of research skills (Spencer Foundation Annual Report, 1997). Spencer fellows consistently, described the importance of having time to write, conduct research, and to plan subsequent research initiatives at a point early in their careers when time was the scarcest resource (Abt evaluation report, p. x). In this light, the AERA Grants Program may well want to consider a postdoctoral strand of their small grants initiative.

Finally, survey respondents were asked to generate a key phrase or label ... to describe yourself as an educational researcher. One-third of both the small grant and institute respondents supplied a methodological self-description, for example, large-scale data analyst, educational statistician, quantitative methodologist, quantitative researcher. Another one-fourth to one-third offered a substantive field within education, for example, education policy, education sociology, higher education, math education. And a few provided more dynamic self-descriptors, including innovative, competent, productive,

promising, up-and-coming, bold, daring, strong-willed, unstoppable. Clearly, the AERA Grants Program s recruitment activities need no improvement.

Recommendations

These recommendations are derived from all data sources in this evaluation.

1. The AERA Grants Program can continue to help increase the amount and scope of educational research with national data bases by further extending its reach to related disciplines and fields. More active advertising in other professional newsletters and at other professional conferences is encouraged.

2. Past participants in the program s statistical institutes had a number of specific suggestions for improvement, which are presented in Table 23. A major theme in these comments is the need for additional help and consultation, both during and as follow-up to the institute.

3. As the heart and soul of the Grants Program, the small grants competition should clearly be maintained. The Governing Board may want to consider adding a targeted post-doctoral strand to this program, specifically to enable young scholars to consolidate their analytic skills and interests in national policy-relevant educational research.

4. Relatedly, the Governing Board is encouraged to pursue the pipeline problem of insufficient numbers of young scholars showing career interest in national data base educational research via (a) a Think Tank or other modest data gathering endeavor to better understand the problem, followed by (b) a programmatic collaboration with the Spencer Foundation or other institution similarly committed to quality education and educational research.

5. The influence of the current program components both on individuals and on the infrastructure of support and advocacy for data base research can be stronger and more durable with increased attention to networking. Networking here refers to building and nurturing relationships among researchers and with government scientists around their common commitment to high quality, nationally-relevant educational research. This was perhaps the most frequently offered recommendation across all components of this evaluation. Specific ideas offered included the following:

    - At the beginning of their grant period, bring recipients of the small grant awards to NCES, NSF, and OERI for a week of intensive training in data sets and policy issues, with scheduled opportunities to meet key policy makers. This will enhance the policy relevance of grantees research, as well as networking among them.

- Develop a mechanism through which all program participants (grantees, institute attendees, fellows) can come together regularly for purposes of ongoing discussions, professional development, and research collaborations. Possible mechanisms are the existing AERA SIG on data base analysis (initiated from the NCES training seminars), a new educational or cross-disciplinary discussion group, and a regular workshop or symposium at the annual meetings of AERA and other relevant professional associations (in sociology, economics, public policy, evaluation, psychology, and others).
- NCES could maintain contact with all program participants with whom they interact through a mailing list or even a newsletter. With regular contact, NCES might interest some individuals in working on new surveys or data bases. Regular contact could also inform people about prior work done with various data bases, about common technical challenges, about new and exciting uses, and so forth. The more sharing, the wider the dissemination, the greater the potential uses of NCES and other national data bases.

In this context, it is noteworthy that the considerable success of Grants Program s first Think Tank on TIMMS in 1993 can be attributed, in large part, to the ability of the Governing Board to gather together highly credible, recognized scholars with the requisite expertise in such a short time. Nurturing the health and growth of this scholarly network will help to pass the torch to the next generation, thereby enabling strong relationships and communications to continue into the future.

6. A stronger network will enhance the visibility of national data base educational research. Existing program components can be extended in other ways in order to enhance visibility, including:

   - Organize a working session with grantees and government scientists, in which grantees could both present their findings and give specific feedback to NCES/NSF staff on data base quality and usability.
   - Organize and publicize annual sessions at AERA, and other relevant professional conferences, for showcasing the work of the small grant recipients and fellows.
   - Place all of the grantees research reports on the web, enabling broader reach and increased visibility.
   - Periodically, produce an edited book featuring some or all of the grantees and fellows work. Editors should be prestigious scholars, policy makers, or both, for example, co-editors could be Rich Shavelson and Larry Suter.

7. If existing program components, particularly the research grants and the institute, are expanded in some of the ways recommended, program resources will need to be expanded or reallocated. One possible source for reallocation is the fellows

component. With its mixed record of success, it is not contributing to program goals at the same cost-effective level as other components.

The fellows component might be reframed, for example. Teams of senior and junior fellows might be recruited to work on specific policy- or practice-related problems for 6-18 months, like the new NCES Commissioner Fellows. Or, fellows might lead an Academy, in which a group of researchers and government scientists would work for 12-18 months on an identified policy- or practice-relevant issue. A variety of structures and tasks for these fellowships may well be most responsive to program goals.

8. Finally, the chasm between producing research and having that research impact policy and practice is widespread. The AERA Grants Program can be a stronger player in advancing the policy- and practice-relevance of educational research, including its relevance to the priorities of NSF. Strategic networking and enhanced visibility will work toward relevance, as researchers, policy makers, and practitioners inform each other about contemporary issues and problems in the field. In addition, the Governing Board can consider the wisdom of extending the Grants Program to include (a) other national or even regional data bases, beyond NCES and NSF, and (b) multiple or mixed method research which combines data base analysis with another methodology that could include the collection of new data. These extensions may better represent the contextual and programmatic aspects of NSF priorities (for example, the quality of specific math and science programs and specific systemic reforms), may offer greater policy- and practice-relevance for more researchers, and may thereby generate more relevant and timely research.

APPENDIX I

AERA Grants Program Governing Board and Administrator

Jeri Benson (1992-1995)
Department of Education
University of Georgia

Martin Carnoy (1998-)
School of Education and
Department of Economics
Stanford University

Audrey Champagne (1990-)
Department of Education
State University of New York, Albany

John A. Dossey (Member 1990-1999; Chair 1999-)
Department of Mathematics
Illinois State University

Edward Fuentes (Ex-officio 1997-)
Office of Educational Research & Improvement
US Department of Education

Jeanne Griffith (Ex-officio)
NCES (1990-1994)
US Department of Education
SRS (1997-)
National Science Foundation

Ernest House (1995-)
Department of Education
University of Colorado, Boulder

Edie McArthur (Ex-officio 1993-)
CES
US Department of Education

Jeanie Murdock (Executive Director 1992-)
Graduate School of Education
University of California, Santa Barbara

Michael Nettles (1998-)
Department of Education
University of Michigan

Jeanne Oakes (1990-1992)
School of Education
University of California, Los Angeles

Jerry Pine (1993-)
Department of Physics
California Institute of Technology

Rodney Reed (1990-1998)
School of Education
Pennsylvania State University

Iris Rothbery (1990-1992)
National Science Foundation

William Russell (Ex-officio 1990-)
Executive Director
AERA

William Schmidt (1990-)
Department of Education
Michigan State University

Barbara Schneider (1997-)
Department of Sociology
University of Chicago

Alan Schoenfeld (1992-)
Graduate School of Education
University of California, Berkeley

Richard Shavelson (Chair 1990-1999; Member 1999-)
School of Education
Stanford University

Jerry Sroufe (Ex-officio 1990-)
Director, Government and Professional Liaison
AERA

Larry Suter (Ex-officio 1992-)
REC, REPP
National Science Foundation

Karen Worth (1998-)
Educational Development Center, Inc.

APPENDIX II

Evaluation Methods[24]

This evaluation used an *iterative mixed-method design* (Greene and Caracelli, 1997),[25] combining the breadth and representativeness of mail surveys with the depth and selectivity of interviews and document analysis.

Assessing Program Effectiveness at the Individual Level

Mail survey. A mail survey was administered to all recipients of Small Grant awards (n=119). A parallel survey was administered to all past participants in the statistical training institutes (n=160). Adjusted response rates of 84% for the grant awardees and 75% for the institute trainees were attained.

The survey collected the following information from respondents:

- ◊ perceptions of the quality of their program experience
- ◊ self-reports of the program s impact, both short-term and long-term and both direct (as in research activities) and indirect (as in teaching and advising)
- ◊ ideas for program improvement
- ◊ perceived value and role of data-base research
- ◊ perceived value and role of policy- and practice-relevant research
- ◊ experiences with groups or networks of data base researchers
- ◊ career responsibilities, both currently and as envisioned in the future
- ◊ demographic characteristics, including disciplines for doctoral study and for employment, stage of career, prior work with large-scale data bases, gender, ethnicity

In addition, grant respondents were asked to return a copy of their vita along with their completed survey. Seventy-one vitas were returned and were analyzed for information on papers, publications, and research pathways and productivity since program participation.

Document review. Review and compilation of existing program records on individual participants program-related papers, publications, and subsequent activities was conducted as a means of corroborating these self-report data.

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[24] For further information about the evaluation methods used, contact the report s senior author, Department of Policy Analysis and Management, 137 MVR, Cornell University, Ithaca NY 14853 (jcg8@cornell.edu).

[25] Greene, J.C., and Caracelli, V.J. (eds.) (1997). Advancing the paradigm issue in mixed-method evaluation. New Directions for Evaluation no. 76. Jossey-Bass: San Francisco.

Individual interviews. Six grant awardees were personally interviewed at AERA 98. These interviews concentrated on identifying the particular program factors or experiences that meaningfully engaged these respondents in sustained research on policy-relevant issues using national data bases, in addition to the challenges and hurdles to sustaining such research they have encountered along the way.

Assessing Program Effectiveness at the Infrastructure Level

Document review. Available program documents were reviewed and summarized to generate a comprehensive description of the AERA Grants Program since its inception.

Federal staff interviews. Individual or group interviews were conducted with 8 NCES, 6 NSF, 2 OERI, and 2 AERA central office staff in Washington DC in the fall of 1998. Interviewees were selected to include the staff knowledgeable about the Grants Program and its activities and those who work directly with AERA fellows as mentors and colleagues. These interviews gathered information about how much and how well the Grants Program has contributed to the use of national data bases in educational research, about the match between policy and practice priorities and the substance of program-supported educational research, and about the estimated cost-effectiveness of this program.

Comparative study. In addition, a modest study was conducted of the Grants Program compared to the Spencer Foundation s post-doctoral program. The scope of this study was limited by the lack of comparable data available from other field-initiated educational research programs. Of the intended dimensions of comparison (quantity, quality, and importance of knowledge generated, and program costs), only limited comparable data were available. The comparison focused on participant characteristics and perceptions of program impact.

Mini-case study of Think Tank or Academy endeavor. Finally, a mini-case study was conducted of the Think Tanks on TIMMS, identified by the Board as high policy relevance. Documents were reviewed and interviews conducted to reconstruct the story of the project and, in particular, to identify the factors responsible for its high policy relevance. Important lessons for future development of the Grants Program infrastructure were derived from this mini-case study.

Interviews with Fellows. Due to time constraints, all program fellows were contacted via email and asked to respond to a few questions, related to their views of their program experiences. Only a few responded.

APPENDIX III

Tables Supporting Evaluation Findings

Table 1
Characteristics of Research Grantees

Characteristic	% responding		
	Dissertation (n = 39)	Research (n = 58)	Total (n=98)
Discipline of doctoral degree	*(n =39)*	*(n =57)*	*(n = 96)*
* education	51	47	49
* sociology	33	16	23
* economics	5	12	9
* psychology	3	7	5
* statistics, quant methods, measurement	5	11	8
* other[26]	3	7	5
Discipline of current job	*(n = 36)*	*(n = 58)*	*(n = 94)*
* education	61	53	56
* sociology	22	14	17
* economics	6	12	10
* psychology	3	3	3
* statistics, quant methods, measurement	0	9	5
* other[1]	8	9	8
At time of AERA grant, awardee was:	*(n = 39)*	*(n = 58)*	*(n = 97)*
* a doctoral student	100	0	40
* a beginning or junior professional			27
* a young, established professional			16
* a mid-career professional			7
* a senior professional			10
Now, awardee is:	*(n = 39)*	*(n = 57)*	*(n = 96)*
* a doctoral student	23	0	9
* a beginning or junior professional	56	12	30
* a young, established professional	13	42	30
* a mid-career professional	3	23	15
* a senior professional	3	21	14
* a retired professional, other	3	2	2

[26] Evaluation, political science, public policy, social work, medicine and health, practice, and others

Table 1 (con t)
Characteristics of Research Grantees

Characteristic	% responding		
	Dissertation (n = 39)	Research (n = 58)	Total (n=98)
**Current job*	*(n = 39)*	*(n = 58)*	*(n = 97)*
* assistant professor	31	28	29
* associate professor	3	28	18
* professor	0	31	19
* grad student, postdoc, instructor, lecturer	21	0	8
* research scientist / analyst	33	12	21
* other (research, administration, school teaching)	13	2	6
Age	*(n = 36)*	*(n = 48)*	*(n = 84)*
* 27-29	17	6	11
* 30-39	72	27	46
* 40-49	8	38	25
* 50-59	3	23	14
* 60+	0	6	4
Gender	*(n = 38)*	*(n = 52)*	*(n= 90)*
* male	47	54	51
* female	53	46	49
Race/ethnicity	*(n = 38)*	*(n = 51)*	*(n=89)*
* African American	5	6	6
* Asian / Asian-American	11	16	14
* Caucasian	76	75	75
* Hispanic	8	4	6
Completed grants project?	*(n = 37)*	*(n = 58)*	*(n = 95)*
* no	32	38	36
* yes	68	62	64
Participated in a statistical institute?	*(n = 39)*	*(n = 58)*	*(n = 97)*
* no	69	71	70
* yes	31	29	30
for whole sample: 4 in 91, 1 in 92, 4 in 93, 3 in 94, 6 in 95, 2 in 96, 2 in 97, 3 in 98			

Table 2
Characteristics of Institute Participants (n=113)

Characteristic	n	% responding
Discipline of doctoral degree	*110*	
* education		73
* sociology		5
* economics		2
* psychology		7
* statistics, quant methods, measurement		9
* other[27]		5
Discipline of current job	*100*	
* education		62
* sociology		2
* economics		2
* psychology		7
* statistics, quant methods, measurement		9
* evaluation		8
* other[28]		10
At time of AERA grant, awardee was:	*113*	
* a doctoral student		41
* a beginning or junior professional		31
* a young, established professional		9
* a mid-career professional		12
* a senior professional		7
Now, awardee is:	*112*	
* a doctoral student		15
* a beginning or junior professional		25
* a young, established professional		26
* a mid-career professional		21
* a senior professional		13

[27] Evaluation, political science, public policy, social work, medicine and health, practice, and others
[28] Social work, research practice and consulting, and others

Table 2 (con t)
Characteristics of Institute Participants (n=113)

Characteristic	n	% responding
**Current job*	*108*	
* assistant professor		23
* associate professor		17
* professor		13
* grad student, postdoc, instructor, lecturer		12
* research scientist / analyst		10
* other: research		9
* other: administration		7
* other: school teaching		7
* unemployed		2
Age	*92*	
* 27-29		12
* 30-39		36
* 40-49		30
* 50-59		19
* 60+		3
Gender	*99*	
* male		56
* female		44
Race/ethnicity	*87*	
* African American		14
* Asian / Asian-American		14
* Caucasian		62
* Hispanic		8
* Other		2
Institute attended	*113*	
* 1991	10	9
* 1992	7	6
* 1993	12	11
* 1994	22	20
* 1995	20	18
* 1996	23	20
* 1997	11	10
* 1998	18	16

Table 3
Perceived Quality of Research Grant Experience

Dimension	n	% responding					mean	sd
		Poor	Adeq	Good	Excel	NR[29]		
Application and Review								
Availability of program information	98	2	10	49	39	--	3.2	.72
Availability of application information	98	0	7	41	52	--	3.4	.63
Appropriateness of application content and procedures	97	1	5	38	56	--	3.5	.65
Timeliness of reviews	98	0	6	22	71	--	3.6	.59
Grant Experience								
Overall quality	96	0	0	40	59	1	3.6	.49
Adequacy of financial resources	97	2	11	50	37	0	3.2	.73
Ease of access to desired data sets	97	7	7	42	41	2	3.2	.87
Ease of working with desired data sets	97	2	8	45	42	2	3.3	.72
Availability of data set consultant experts	96	7	16	34	22	21	2.9	.92
Availability of statistical consultant experts	96	7	19	25	14	35	2.7	.93
Availability of requisite software at home institution	97	5	11	26	56	2	3.3	.88

[29] Not relevant, excluded from calculations of means and sds

Table 3 (con t)
Perceived Quality of Research Grant Experience

		% responding						
Dimension	n	Poor	Adeq	Good	Excel	NR	mean	sd
Availability of requisite hardware at home institution	97	6	7	25	60	2	3.4	.88
Overall value, usefulness of AERA research grant experience	97	0	5	25	70	--	3.6	.56

Table 4
Research Grantees Reasons for Program Quality Ratings[30]

Category / Reason	# and % (1st reason) (n=88)	# and % (2nd reason) (n=79)
Financial benefits	**36 (41%)**	**25 (32%)**
+ opportunity to fund / support / train graduate students	3 (3%)	6 (8%)
+ funding was very valuable, stable, more than adequate	8 (9%)	3 (4%)
+ flexible, enabled concentration on research, release time for research, relief from job responsibilities, more time for research than would have been otherwise possible	21 (24%)	13 (16%)
+ funds to purchase hardware, software, books	2 (2%)	2 (3%)
- insufficient funds (for grad students, release time)	2 (2%)	---
- checks did not arrive on time	---	1 (1%)
Administrative ease	**10 (11%)**	**6 (8%)**
+ prompt, efficient, well administered, especially review process	4 (5%)	3 (4%)
+ supportive, helpful, responsive staff (AERA) and consultants (agencies)	5 (6%)	3 (4%)
- lack of consistent information regarding grant and timeline	1 (1%)	---
Access to data sets and expertise	**7 (8%)**	**12 (15%)**
+ access to restricted data, access to national data sets, access to a desired data set, license from NCES, access to data set experts, access to knowledgeable people, access to high quality data	7 (8%)	7 (9%)
- obtaining data very frustrating, consultant availability not communicated, access to restricted data hampered by home institution or by other conditions	---	5 (6%)
Career enhancement	**9 (10%)**	**9 (11%)**
+ provide jump start on career, looks good on vita, help visibility in field, increase research productivity, establish research credentials, help career growth, attract additional research funds, contribute to research legitimacy, develop grant writing record, enhance research productivity		

[30] From inductive categorization of responses to open-ended survey question, asking for two reasons for rating of overall quality of grant experience. Interview results corroborated this categorization. In the table, + signify positive comments, and - negative comments.

Table 4 (con t)
Research Grantees Reasons for Program Quality Ratings

Category / Reason	# and % (1st reason) (n=88)	# and % (2nd reason) (n=79)
Career direction + motivation to conduct large-scale secondary data analysis, support important career decisions, help form independent research agenda	---	**3 (4%)**
Professional development + autonomy to pursue new research area of interest; learned a lot about methodology, about using national data sets and dealing with bureaucrats, about grant writing process; provided motivation that my research topic is worthwhile; enabled me to do research I really wanted to do; forced me to think clearly about my dissertation research; enhanced my confidence in my ability to wrangle large data sets	**14 (16%)**	**10 (13%)**
Substantive support or enhancement + provided opportunity to inform policy debate on issue of national significance; enabled me to do dissertation on chosen policy question about teachers, about black youth; funded research of interest and importance to people outside academia; contributed to educational policy research	**5 (6%)**	**10 (13%)**
General comments + valuable assistance; all I needed was available - more opportunities for networking and interaction needed	**6 (7%)**	**1 (1%)**
Unclassified/unclear	**1 (1%)**	**3 (4%)**

Table 5
Respondents Reasons for Applying for the AERA Small Grants[31]

		% responding						
Belief	n	SD	D	U	A	SA	mean	sd
a. The program is a significant source of funding for field-initiated educational research.	97	2	6	18	33	41	4.1	1.0
d. The grant enabled me to use the one data base available that can best address my own research interests.	97	0	3	8	55	34	4.2	.72
h. The grant gave me valuable financial flexibility, which significantly helped me get this research done.	98	0	3	5	33	59	4.5	.74
l. The grant enabled me to allo-cate more time and energy to this research, which was critical for me in getting this research done.	98	1	1	6	42	50	4.4	.74
b. Large-scale national data sets offer valuable opportunities for career-enhancing research.	98	0	1	0	29	70	4.7	.53
j. I believe the primary responsibility of the educational research community is to conduct research that directly contributes to current policy and practice decisions.	97	0	6	6	45	42	4.2	.83
*c. Educational researchers can most meaningfully inform educational policy and practice issues through large-scale national data set research.	97	1	8	12	50	30	4.0	.92
e. The most important way educational researchers can use their expertise is to develop a thorough understanding of existing national data sets related to education.	96	4	16	22	42	17	3.5	1.1

[31] Scale of 1=Strongly disagree to 5=Strongly agree, with U=Uncertain about own views

Table 5 (con t)
Respondents Reasons for Applying for the AERA Small Grants

		% responding						
Belief	n	SD	D	U	A	SA	mean	sd
f. Analyses of national data sets offers the best opportunities for addressing important national **policy** questions.	98	0	11	12	50	27	3.9	.92
g. Analyses of national data sets offers the best opportunities for addressing important national **practice** questions.	98	2	32	26	31	10	3.2	1.0
i. In my view, the most critical educational questions today can be answered through research on large-scale national data sets.	97	2	18	22	43	16	3.5	1.0
k. In my view, the best educational researchers today are those who conduct large-scale data base research.	97	4	28	31	32	5	3.1	.99
*Scale average scores:								
Overall sample	96						3.5	.75
Research grantees	56						3.6	.73
Dissertation grantees	39						3.4	.77

*Items below the double line formed a uni-dimensional scale. Principal components factors analysis on these six items yielded one factor, accounting for 57.6% of the variance. The Cronbach alpha reliability estimate for these six items was .85.

Table 6
Perceived Quality of Statistical Institute Experience

		% responding						
Dimension	n	Poor	Adeq	Good	Excel	NR[32]	mean	sd
Adequacy of financial resources for participating in Institute	112	1	18	39	41	1	3.2	.77
Quality of information presented on statistical analyses	112	4	13	44	39	0	3.2	.80
Quality of information presented on modeling policy issues	112	5	28	47	19	2	2.8	.79
Quality of information presented on working with specific data sets	112	4	21	45	31	0	3.0	.82
Ease of working with specific data sets	111	9	32	42	17	0	2.7	.87
Appropriateness of software for analysis in home institution	112	8	26	30	36	1	2.9	.98
Adequacy of instructional resources during Institute	112	5	15	33	47	0	3.2	.87
Match of Institute content to own research objectives	112	6	29	38	26	1	2.8	.89
Overall Institute quality	112	3	12	48	38	0	3.2	.75

[32] Not relevant, excluded from calculations of means and sds

Table 7
Institute Participants Reasons for Program Quality Ratings[33]

Category / Reason	# and % (1st reason) (n=92)	# and % (2nd reason) (n=80)
Institute administration and presentation	**21 (23%)**	**21 (26%)**
+ Good hands-on opportunities, superb instruction	14 (15%)	11 (14%)
- Dataset and methods not coordinated, too little time, poor instruction, too technical, too much lecture, computer incompatibilities were disruptive	5 (5%)	5 (6%)
- Need to show better relationship of policy to data	---	4 (5%)
- Participants lacked substantive knowledge, too many statistical people	1 (1%)	1 (1%)
- Unfortunate emphasis on group project	1 (1%)	---
Institute content	**12 (13%)**	**5 (6%)**
+ Well done, helpful, considerable detail provided	6 (7%)	2 (3%)
+ Pleased with chosen topic of institute	---	2 (3%)
- Not enough depth and not the right information	5 (5%)	---
- More application of concepts needed	---	1 (1%)
- Already knew the material	1 (1%)	---
Increased knowledge of and access to data bases	**10 (11%)**	**6 (8%)**
+ Learned about data bases available	9 (10%)	4 (5%)
+ Gained access to data base	1 (1%)	1 (1%)
- Not enough indepth explanation of data	---	1 (1%)
Use of data bases and information from training	**5 (5%)**	**7 (9%)**
+ Have used training and data bases, use data bases with classes	2 (2%)	2 (3%)
- Not using/not had opportunity to use data bases	3 (3%)	5 (6%)
Career enhancement	**4 (4%)**	**1 (1%)**
+ Have used data to publish	2 (2%)	---
+ Allowed me to complete MS	1 (1%)	---
+ Offered enhanced career opportunities, advancement	1 (1%)	1 (1%)

[33] From inductive categorization of responses to open-ended survey question, asking for two reasons for rating of overall quality of grant experience. Interview results corroborated this categorization. In the table, + signify positive comments, and - negative comments.

Table 7 (con t)
Institute Participants Reasons for Program Quality Ratings

Category / Reason	# and % (1st reason) (n=92)	# and % (2nd reason) (n=80)
Career direction	**6 (7%)**	**2 (3%)**
+ Got ideas for future research, increased knowledge of research possibilities and existing data sets	3 (3%)	2 (3%)
+ Used data in research	2 (2%)	---
- Interests changed after attending institute	1 (1%)	---
Professional development	**16 (17%)**	**21 (26%)**
+ Learned new skills, strengthened abilities/interests, improved qualifications, learned how to use data, gained understanding of methodological issues and exposure to new statistical methods	16 (17%)	16 (20%)
+ Having this information helps when talking with colleagues	---	1 (1%)
+ Gained valuable insights into granting agencies and evaluation	---	1 (1%)
- Didn t learn enough to do alone	---	1 (1%)
- Had difficulty identifying how training might be useful, training not relevant	---	2 (3%)
Networking	**9 (10%)**	**13 (17%)**
+ Opportunities for networking with other researchers, with instructors/ experts	9 (10%)	11 (14%)
- Need more networking opportunities, no meaningful connections made	---	2 (3%)
General comments	**1 (1%)**	**---**
+ Great introduction to important data!		
Unclassified/unclear	**8 (9%)**	**4 (5%)**

Table 8
Respondents Reasons for Participating in the AERA Statistical Institutes[34]

Belief	n	% responding SD	D	U	A	SA	mean	sd
a. Advances in statistical analyses make large-scale data set research significantly more accessible to more researchers.	112	3	9	12	46	30	3.9	1.0
b. Large-scale national data sets offer valuable opportunities for career-enhancing research.	112	0	2	11	48	39	4.3	.72
h. I believe the primary responsibility of the educational research community is to conduct research that directly contributes to current policy and practice decisions.	111	2	8	5	44	41	4.1	.97
j. The Institute provided information about the one data base available that can best address my own research interests.	111	6	38	21	28	7	2.9	1.1
*c. Educational researchers can most meaningfully inform educational policy and practice issues through large-scale national data set research.	112	2	21	30	30	18	3.4	1.1
d. The most important way educational researchers can use their expertise is to develop a thorough understanding of existing national data sets related to education.	112	7	29	32	23	9	3.0	1.1
e. Analyses of national data sets offers the best opportunities for addressing important national **policy** questions.	111	2	20	23	44	11	3.4	.99
f. Analyses of national data sets offers the best opportunities for addressing important national **practice** questions.	109	5	30	33	28	4	3.0	.96
g. In my view, the most critical educational questions today can be answered through research on large-scale national data sets.	111	8	36	31	20	5	2.8	1.0
i. In my view, the best educational researchers today are those who conduct large-scale data base research.	111	16	42	27	12	3	2.4	.99
*Scale average scores	109						3.0	84

[34] Scale of 1=Strongly disagree to 5=Strongly agree, with U=Uncertain about own views

Table 8 (con t)
Respondents Reasons for Participating in the AERA Statistical Institutes

*Items below the double line formed a uni-dimensional scale. Principal components factors analysis on these six items yielded one factor, accounting for 67.8% of the variance. The Cronbach alpha reliability estimate for these six items was .90.

Table 9
Small Grant Respondents Reports of Skills/Interests Gained[35]

		% responding						
Through my AERA research grant experience:	n	SD	D	U	A	SA	mean	sd
I gained valuable knowledge or skills.	96	1	2	3	37	57	4.5	.75
My confidence in my ability to conduct large-scale data set research was strengthened.	96	2	1	8	44	45	4.3	.83
My interest in large-scale data set educational research was enhanced.	96	2	2	6	50	40	4.3	.83
I developed further understanding of what makes educational research relevant to policy or practice.	96	2	8	9	51	29	4.0	.96
*Scale average scores:								
Overall sample	96						4.2	.70
Research grantees	57						4.2	.61
Dissertation grantees	39						4.3	.81

*These four items formed a uni-dimensional scale. Principal components factors analysis on the items yielded one factor, accounting for 69.0% of the variance. The Cronbach alpha reliability estimate for these four items was .85.

[35] Scale of 1=Strongly disagree to 5=Strongly agree, with U=Uncertain about own views

Table 10
Small Grant Respondents Uses of Grant Experience[36]

		% responding					
Use	n	1	2	3	4	NR	median
a. Gave a presentation at international, national, or regional conference	97	2	4	17	76	1	4.0
b. Published article in a refereed journal	96	3	3	50	42	2	3.0
c. Published a chapter in a book	97	27	28	20	22	4	2.0
d. Published a book	95	55	23	12	5	5	1.0
e. Wrote a successful proposal for large-scale data set research in same general area	94	21	20	33	22	3	3.0
f. Wrote a successful proposal for large-scale data set research in a different area	96	20	25	33	20	2	3.0
g. Revised my teaching to incorporate instruction in large-scale data set research	97	25	14	10	29	22	2.5
h. Recruited or attracted new grad students whom I now mentor in large-scale data set research	97	16	12	17	38	18	3.0
i. Presented workshops or seminars on large-scale data set educational research	97	20	21	16	35	8	3.0
j. Provided consultation to others engaged in educational research with large-scale data sets	96	13	6	8	69	4	4.0
k. Helped build the capacity of my home institution for educational research with large-scale data sets	97	16	8	14	49	13	4.0

[36] Scale: 1= No, I haven t done this and I do not intend to
2=Not sure, I haven t done this and I am not sure I will
3=Not yet, I haven t done this, but I intend to or I am working on it
4=Yes, I have done this
NR= Not relevant; NR responses excluded from calculations of summary statistics

Table 11
Small Grant Recipient Conference Presentations, From CVs (n=52) and Survey (n=59)

Conference	# reporting from CVs				# from surveys
	91-92	93-95	96-99	total	
Econometric Society of North America			1	1	1
International meeting of statisticians					1
AERA	4	17	29	50	48
Association for the Study of Higher Education			5	5	4
National Council on Measurement in Education			1	1	1
Psychometric Society					1
American Sociological Association			5	5	15
Society for Applied Sociology					1
Association for Institutional Research			3	3	3
National Forum for Educational Statistics	1	1		2	
American Economics Association			1	1	2
APPAM			1	1	2
American Educational Finance Association			2	2	4
National Council of Professors of Educational Administration			2	2	3
American Psychological Association					1
Society for Research on Child Development					2
Population Association of America					1
NCES	3			3	1
US Census Bureau		1		1	
AAUW Education Foundation			1	1	
University Council for Education Administration		1		1	1
National Association of State Universities and Land Grant Colleges			1	1	1
USDA Cooperative State Research, Education, and Extension Service			1	1	1
US Department of Defense Reserve Affairs			1	1	
National Social Work Association			1	1	1
Society for College and University Planning			1	1	
NEECO					1
CASA (conf on using large data sets)					1
Commission for a Nation of Lifelong Learners			1	1	

Table 11 (con t)
Small Grant Recipient Conference Presentations, From CVs (n=52) and Survey (n=59)

Conference	# reporting from CVs				# from surveys
	91-92	93-95	96-99	total	
National Institute for Technology Summer Training Institute			1	1	1
University and Industry Consortium Meeting			1	1	
New England Educational Research Association			1	1	1
Eastern Sociological Association	1	1	1	3	1
Southern Sociological Society					1
Southern Rural Sociologists Association			1	1	1
Midwest Economics Association					1
Eastern Economics Association					1
NY State Teachers of English to Speakers of Other Languages			1	1	1
Regional meeting of women and science					1
Southern Association of Agricultural Experiment Station Directors Meeting			1	1	
Purdue University			3	3	3
Columbia University			1	1	
Cornell University			1	1	
SUNY Albany			1	1	
University of South Florida			1	1	
Temple University	1			1	
Michigan State University			1	1	1
Mills College and AAUW	1			1	
Long Island University		1		1	
University of Minnesota					2
Mississippi State University			1	1	
Mississippi State Institutions of Higher Learning			1	1	
University of North Carolina					1
Totals	11	22	74	107	112

Table 12
Small Grant Recipient Journal Publications,
From Program List (n=25), Vitas (n=52), and Survey (n=34)

Publication	# reporting			
	prog m list	+ vitas	prog m total	survey
Advances in Research Methods and Analysis for Organizational Studies	1		1	
American Economic Review	1		1	1
American Educational Research Journal	4	3	7	2
American Sociological Review		1	1	
Applied Measurement in Education		1	1	1
Applied Psycholinguistics	1		1	
Child Development				1
Color				1
Developmental Psychology		1	1	1
Economics Letters		2	2	2
Education		1	1	1
Education and Urban Society		1	1	
Educational Evaluation and Policy Analysis	4	2	6	4
Educational Horizons	1	1	2	1
Educational Leadership		2	2	
ERIC Digest	1		1	
Focus on Learning Problems in Mathematics	1		1	
Industrial Relations	1	1	2	1
Journal for Research in Mathematics Education	1		1	
Journal of Adolescent and Adult Literacy	1		1	1
Journal of Computers in Human Services				1
Journal of Educational and Behavioral Statistics	1		1	2
Journal of Educational Psychology	1	1	2	
Journal of Educational Research	3	1	4	4
Journal of Experimental Education	1		1	2
Journal of Higher Education		4	4	1
Journal of Human Resources		4	4	3
Journal of Labor Economics		1	1	
Journal of Marriage and the Family	1		1	
Journal of Personality and Social Psychology	1	1	2	
Journal of Research in Science Teaching	2		2	1
Journal of Research in Science Technology				1
Journal of Research on Adolescents				1
Journal of Student Financial Aid		1	1	1

Table 12 (con t)
Small Grant Recipient Journal Publications,
From Program List (n=25), Vitas (n=52), and Survey (n=34)

Publication	# reporting			
	prog m list	+ vitas	prog m total	survey
The National Data Archive on Child Abuse and Neglect		1	1	
New Waves Educational Research and Development	1		1	
Phi Delta Kappan	1	2	3	2
Race, Ethnicity and Education				1
Reading Improvement	1		1	
Research in Higher Education	1	2	3	4
Research in Middle Level Education Quarterly		1	1	1
Research in Schools		1	1	2
Research in Social Stratification and Mobility	1		1	1
Review of Economics and Statistics	1		1	1
Rural Special Education Quarterly	1		1	
Science Education		1	1	1
School Science and Math		1	1	2
SEM				1
Social Forces		1	1	1
Social Psychology of Education	1	1	2	2
Sociological Inquiry		1	1	2
Sociology of Education	2	3	5	3
Studies in Educational Evaluation		1	1	1
Teachers College Record	1		1	1
The Journal of School Business Management	1		1	1
Urban Education				1
Total	39	45	84	62
+ Journal publications by 13 fellows and evaluation trainees*				
Grand total			14	
			98	

***** Published in the following additional journals: *American Journal of Sociology, Association for Women in Science (AWIS) Magazine, Comparative Education Review, Educational Researcher, Harvard Educational Review, Journal of American Biology Teachers, Journal of Science Education and Technology, New Directions for Evaluation, Sociological Studies of Children, The Journal of Negro Education*

Table 13A
Small Grant Recipients Time Allocated to Large-Scale Data Set Research (n = 94)

	% responding			# (%)	
Percent time	Before grant	After grant	Bef Aft %	Increase	Decrease
0	8	2	0	--12	(13%) --
1-10	33	6	1-10	19 (20%)	3 (3%)
15, 20	12	14	11-20	11 (12%)	3 (3%)
25, 30	12	13	21-30	16 (17%)	---
35, 40	5	11	31-40	10 (11%)	---
45, 50	12	14	41-50	5 (6%)	3 (3%)
55-75	10	19	51-70	7 (7%)	---
80-100	8	21	71-90	4 (4%)	1 (1%)
mean	30.2	50.1	mean change	19.9	
sd	30.0	28.6	sd	29.2	

Table 13B
<u>Dissertation</u> Grant Recipients Time Allocated to Large-Scale Data Set Research (n = 39)

	% responding			# (%)	
Percent time	Before grant	After grant	Bef Aft %	Increase	Decrease
0	10	3	0	--4	(10%) --
1-10	28	8	1-10	3 (8%)	---
15, 20	13	5	11-20	3 (8%)	1 (3%)
25, 30	13	5	21-30	7 (18%)	---
35, 40	5	8	31-40	6 (15%)	---
45, 50	15	15	41-50	3 (8%)	1 (3%)
55-75	5	23	51-70	7 (18%)	---
80-100	10	33	71-90	3 (8%)	1 (2%)
mean	30.4	61.2	mean change	30.8	
sd	26.9	30.8	sd	34.9	

Table 13C
<u>Research</u> Grant Recipients Time Allocated to Large-Scale Data Set Research
(n = 55)

	% responding			# (%)	
Percent time	Before grant	After grant	Bef Aft %	Increase	Decrease
0	7	2	0	--8 (14%) --	
1-10	36	5	1-10	16 (29%)	3 (5%)
15, 20	11	20	11-20	8 (15%)	2 (4%)
25, 30	11	18	21-30	9 (16%)	---
35, 40	5	13	31-40	4 (7%)	---
45, 50	9	13	41-50	2 (4%)	2 (4%)
55-75	13	16	51-70	---	---
80-100	7	13	71-90	1 (2%)	---
mean	30.0	42.3			
sd	29.0	24.3			

Table 14
Career Context of Small Grant, as Reported by Respondents to Survey

Career-related question	% responding		
	All grantees (n=95-97)	Dissertation (n=37-39)	Research (n=58)
My AERA grants experience:			
• was my first experience with large-scale data base research	15	24	9
• helped me initiate a line of research using large-scale data bases	35	41	31
• was part of an already-established line of research I was conducting using large-scale data bases	47	27	60
• was an isolated research experience for me	3	8	0
My AERA grants experience ____ my beliefs in the value of large-scale data set research.			
• primarily diminished	2	3	2
• primarily confirmed	38	28	45
• primarily enhanced	60	70	53
My AERA grants experience:			
• offered me a unique research and professional development opportunity	55	59	52
• comprised a valuable but not unique research opportunity for me	41	36	45
• was an ordinary research opportunity for me	4	5	3
My AERA grants experience ____ my career path and direction.			
• primarily confirmed	65	60	67
• modestly altered	28	32	26
• substantially changed	7[37]	8	7

[37] At least 5 of these 7 respondents reported that the change was in the direction of greater certainty about using large-scale data sets for future research or intended greater use thereof.

Table 15
Statistical Institute Respondents Reports of Skills/Interests Gained[38]

Through my participation in the AERA Statistical Institute:	n	% responding SD	D	U	A	SA	mean	sd
I gained valuable knowledge or skills.	112	2	6	7	51	34	4.1	.91
My confidence in my ability to conduct large-scale data set research was strengthened.	112	1	12	13	47	27	3.9	.97
My interest in large-scale data set educational research was enhanced.	111	1	14	9	51	26	3.9	.98
I developed further understanding of what makes educational research relevant to policy or practice.	110	5	17	11	46	21	3.6	1.1
*Scale average scores	110						3.9	.79

*These four items formed a uni-dimensional scale. Principal components factors analysis on the items yielded one factor, accounting for 62.5% of the variance. The Cronbach alpha reliability estimate for these four items was .80.

[38] Scale of 1=Strongly disagree to 5=Strongly agree, with U=Uncertain about own views

Table 16
Statistical Institute Respondents Uses of Institute Experience[39]

Use	n	% responding 1	2	3	4	NR	median
a. Used the statistical technique I learned in conducting a research project	112	1	24	30	36	3	3.0
b. Conducted further analyses with the data set that was the focus on my institute	111	29	22	21	26	3	2.0
c. Went on to receive more training in large-scale data base analysis	110	22	27	24	25	3	2.0
d. Gave a presentation at international, national, or regional conference	109	22	17	31	28	3	3.0
e. Published an article in a referred journal	107	22	23	43	9	3	3.0
f. Published a chapter in a book	106	39	32	19	7	4	2.0
g. Published a book	102	54	23	16	1	7	1.0
h. Wrote a successful proposal for large-scale data set research:							
• using the same statistical technique and the same data base as my institute	106	49	18	21	2	10	1.0
• using the same statistical technique but a different data base	106	26	29	27	9	9	2.0
• using a different statistical technique but the same data base	106	42	26	17	5	10	2.0
• using a different statistical technique and a different data base	108	18	23	30	21	8	3.0
i. Wrote a proposal for the AERA small grants program	110	24	28	28	12	8	2.0
j. Revised my teaching to incorporate instruction in large-scale data set research	111	23	18	16	23	19	2.0

[39] Scale: 1= No, I haven t done this and I do not intend to
2=Not sure, I haven t done this and I am not sure I will
3=Not yet, I haven t done this, but I intend to or I am working on it
4=Yes, I have done this
NR= Not relevant; NR responses excluded from calculations of summary statistics

Table 16 (con t)
Statistical Institute Respondents Uses of Institute Experience

		% responding					
Use	n	1	2	3	4	NR	median
k. Attracted new graduate students as mentees in large-scale data set research	111	29	12	21	17	22	2.0
l. Presented workshops on large-scale data set research	111	24	23	21	27	5	2.5
m. Provided consultation on large-scale data set research	111	17	20	12	48	4	3.0
n. Helped build the capacity of my home institution to do educational research with large-scale data sets	111	21	19	23	33	5	3.0

Table 17
Data Bases Used in Small Grants Program Over Time

Grant period	Data base	Number of grantees	Survey # (n=98)
First grant, 1990-1992 (n=9)	NELS HS&B	4	
	SASS	3	
	NAEP	1	
		1	
Second grant, 1993-95 (n=47)	NELS	21	
	HS&B	7	
	SASS	5	
	NAEP	2	
(new in second grant--->)	LSAY	4	
	CCD	2	
	NHES	1	
	NSOPF	1	
	NLSY	1	
	NALS	1	
	BPS	1	
	IEA (2nd)	1	
			(all
Third grant, 1996-2000 (three years	NELS	30	*grants)*
of data reported) (n=68)	HS&B	5	39
	SASS	2	16
	NAEP	5	7
	LSAY	3	5
	CCD	1	5
	NHES	3	2
	NSOPF	3	6
	NLSY	1	4
	NALS	1	--
	BPS	1	3
	IEA (2ND)	0	2
			--
(new in third grant--->)	B&B	5	
	NPSAS	1	4
	SED	1	--
	TIMMS	5	1
	RCGS	1	1
	Other	--	--
			3

Table 18
Survey Respondents Reports of Networking Benefits from Program

Networking benefit	n	% responding[40] 1	2	3	4	NR	median
Small grant recipients:							
7l. Used the contacts I made during the grants program to help advance my own interests	96	19	20	24	31	6	3.0
7m. Used the contacts I made during the grants program to promote large-scale data set research in general	97	22	28	17	28	6	2.0
7n. Worked collaboratively with the contacts I made during the grants program on some large-scale data base research project(s)	97	26	33	18	16	8	2.0
Institute participants:							
7o. Used the contacts I made during the institute to help advance my own interests	111	18	32	18	28	5	2.0
7p. Used the contacts I made during the institute to promote large-scale data set research in general	111	31	30	21	14	5	2.0
7q. Worked collaboratively with the contacts I made during the institute on some large-scale data base research project(s)	111	39	30	13	14	5	2.0

(table continued, next page--->)

[40] Scale: 1= No, I haven t done this and I do not intend to
2=Not sure, I haven t done this and I am not sure I will
3=Not yet, I haven t done this, but I intend to or I am working on it
4=Yes, I have done this
NR= Not relevant; NR responses excluded from calculations of summary statistics

Table 18 (con t)
Survey Respondents Reports of Networking Benefits from Program

		% responding[41]					
Networking benefit	n	SD	D	U	A	SA	mean
Small grant recipients:							
9c. I made important contacts with people in the government.	96	9	29	20	30	12	3.1
9d. I made important contacts with other educational data set researchers.	95	6	21	15	44	14	3.4
Institute participants:							
8c. I made important contacts with people in the government.	112	15	30	20	23	12	2.9
8d. I made important contacts with other educational data set researchers.	111	11	19	17	36	17	3.3

[41] Scale of 1=Strongly disagree to 5=Strongly agree, with U=Uncertain about own views

Table 19
Universities of Researchers Funded by Small Grants Program

	# by grant period					
	Dissertation		Research			
University	2nd	3rd	1st	2nd	3rd	Total
American Univ		1			1	2
Boston College		1				1
Brandeis Univ			1			1
BYU				1		1
Columbia Univ		1	1			2
Columbia Univ, Teachers College		1			1	2
Cornell Univ					1	1
CSU Bakersfield					1	1
CSU Los Angeles				1		1
Harvard Univ		2		1	1	4
Hendrix College			1			1
Howard Univ		1				1
Indiana Univ		1		1	2	4
Indiana Univ, PA				1		1
Johns Hopkins Univ	1	1			1	3
Long Island Univ				1		1
*Michigan State Univ**	*1*					*1*
Mississippi State	1					1
NC State Univ				1	1	2
New York Univ	1					1
Northern Ill Univ					1	1
Ohio State Univ		1			1	2
Penn State Univ				*1*	*2*	*3*
Providence College			1			1
Purdue Univ				1		1
St Johns Univ					1	1
Stanford Univ		*3*				*3*
SUNY Albany		*1*				*1*
SUNY Buffalo			1	1	1	3
Synthetics, Inc					1	1
Temple Univ	1					1
Texas Tech Univ					1	1
Univ Arkansas		1				1
Univ British Columbia	1		1			2
Univ Chicago	*1*	*5*		*2*		*8*
Univ Cincinnati					1	1
Univ Colorado, Denver					2	2

Table 19 (con t)
Universities of Researchers Funded by Small Grants Program

	# by grant period					
	Dissertation		Research			
University	2nd	3rd	1st	2nd	3rd	Total
Univ Connecticut					1	1
Univ Delaware		1		2		3
Univ Georgia					1	1
Univ Hawaii					1	1
Univ Illinois				1		1
Univ Illinois, Chicago		1				1
Univ Maine					1	1
Univ Maryland	1	1		1		3
Univ Michigan	1	1	1	3	1	7
Univ Minnesota			1	1		2
Univ Nevada					1	1
Univ North Carolina	3	2			1	6
Univ Notre Dame					1	1
Univ Oregon					1	1
Univ Pennsylvania		2				2
Univ Rochester					1	1
Univ Texas				1	1	2
Univ Virginia		1				1
Univ Washington					2	2
Univ West Sydney				1		1
Univ Wisconsin		1				1
UC Berkeley	*1*	*1*				*2*
UCLA	1			3		4
UC San Diego		1		1	1	3
UC Santa Barbara	*1*	*1*	*1*	*3*		*6*
Utah State Univ					1	1
Virginia Tech	1			1		2
Yale Univ		1				1

* Italicized entries are Governing Board members institutions.

Table 20
Content Analysis of Small Grants Funded (n=90)

Content question / sub-question	Type of grant	Level of education studied	Student characteristics studied, as relevant	Key constructs or relationships studied
I. What has been potentially learned about the quality and effectiveness of **math and science education**?	18 research 15 dissert 33 total	1 elem/secondary 3 middle 11 middle/sec 13 secondary 2 post-secondary 3 K-12		
• in terms of the scope and equity of **opportunities/access to studying math and science**?	5 research 1 dissert 6 total	1 middle/sec 3 secondary 2 post-secondary	* opportunities by race, gender, and class (2) * opportunities for non-college bound students (1)	* curricular opportunities and access (1) * science and math training (1) * effects of school characteristics and funding on opportunities (2) * persistence and participation in science and math programs (2)
• in terms of **student math and science achievement**?	12 research 9 dissert 21 total	3 middle 8 middle/sec 7 secondary 3 K-12	* achievement for minority and at-risk students (8) * achievement internationally (3)	* effects of tracking on achievement (4) * correlates of achievement, e.g., class size and motivation (3) * persistence and college readiness (3) * international achievement comparisons (3) * achievement for minority and at-risk students (8) (2 with focus on achievement disparities)
• in terms of the quality of **math and science curricula/ programs/ restructuring/ systemic reform**?	0 research 2 dissert 2 total	2 secondary		* substance of science and math curricula (2)

Table 20 (con t)
Content Analysis of Small Grants Funded (n=90)

Content question / sub-question	Type of grant	Level of education studied	Student characteristics studied, as relevant	Key constructs or relationships studied
• in terms of **student achievement in particular science and math curricula/ programs**?	1 research 3 dissert 4 total	1 elem/secondary 2 middle/sec 1 secondary		* organizational effects on student achievement test scores (2) * public-private achievement test score comparisons (1) * validity of test scores (1)
II. What has been potentially learned about the **educational experiences and achievement of minority, low-income and other at-risk students**, other than in science and math?	14 research 10 dissert 24 total	1 pre-school 1 elementary 1 elem/secondary 3 middle 4 middle/sec 10 secondary 1 sec/post-sec 2 post-secondary 1 K-12	* minority students (8) * Black students (5) * low-income students (3) * women (2) * at-risk students (4) * Latino students (1) * Title I students (1)	
• in terms of the scope and equity of **opportunities/access to education**?	4 research 2 dissert 6 total	1 pre-school 2 middle/sec 1 secondary 1 sec/post-sec 1 K-12	* minority students (2) * Black students (2) * low-income students (1) * women (1)	* effects of desegregation on minority student outcomes (1) * importance of minority integration in college (1) * educational opportunities for Blacks (2) * low-income student participation in arts programs (1) * opportunities for women to transition out of poverty (1)

Table 20 (con t)
Content Analysis of Small Grants Funded (n=90)

Content question / sub-question	Type of grant	Level of education studied	Student characteristics studied, as relevant	Key constructs or relationships studied
• in terms of **minority, low-income, at-risk student achievement**?	6 research 3 dissert 9 total	1 elementary 1 elem/secondary 1 middle 1 middle/sec 3 secondary 2 post-secondary	* Black students (3) * low-income students (2) * at-risk students (2) * Latino students (1) * Title I students (1)	* achievement among Black students (3) (success in college, as compared to White students) * achievement for low-income students (2) * achievement and social connectedness by ethnicity (1) * impact of teen drinking on achievement (1) * educational attainment among Latino students (1) * achievement for Title I students (1)
• in terms of **other educational outcomes of minority, low-income, at-risk students**?	4 research 5 dissert 9 total	2 middle 1 middle/sec 6 secondary	* minority students (6) * women (1) * at-risk students (2)	* aspirations among minority students (2) * transition to college for minority students (2) * minority student drop-out rates (2) * organizational influence on at-risk student development (1) * a comprehensive model of teen drinking (1) * drop-out rates for adolescent child bearers (1)

Table 20 (con t)
Content Analysis of Small Grants Funded (n=90)

Content question / sub-question	Type of grant	Level of education studied	Student characteristics studied, as relevant	Key constructs or relationships studied
III. What has been potentially learned about **teacher preparation and quality**?	6 research 4 dissert 10 total	3 secondary 5 K-12 1 adult 1 general		
• with respect to **teacher preservice education**?	2 research 2 dissert 4 total	1 secondary 3 K-12		* teacher recruitment (1) * teacher quality and training (1) * resources and restructuring as related to teacher quality (2)
• with respect to **inservice education and professional development opportunities**?	4 research 2 dissert 6 total	2 secondary 2 K-12 1 adult 1 general		* teacher retention (4) * teacher commitment (2) (as related to professional support, school structure)
IV. What has been potentially learned about the **resources and institutional structures and practices of education**?	1 research 2 dissert 3 total	1 elementary 2 middle/sec		
• in terms of the **equity of resources across locales or groups**?	1 dissert	1 middle/sec		* public vs private school resource allocations
• in terms of **concerted efforts at restructuring** (other than for math and science or for at-risk students)?	1 research 1 dissert 2 total	1 elementary 1 middle/sec		* effects of school policies on reading proficiency (1) * public vs private school policies and effects on student body (1)

Table 20 (con t)
Content Analysis of Small Grants Funded (n=90)

Content question / sub-question	Type of grant	Level of education studied	Student characteristics studied, as relevant	Key constructs or relationships studied
V. What has been potentially learned about:	8 research 12 dissert 20 total	2 preschool 4 middle/sec 6 secondary 7 post-secondary 1 K-12		
• **other correlates of student achievement?**	5 research 5 dissert 10 total	3 middle/sec 6 secondary 1 K-12		* college application behavior (1) * exposure to computers (1) * service learning (2) * social networks (2) * heritage language maintenance (1) * value climates (1) * parent involvement (2)
• **post-secondary education processes and outcomes?**	2 research 5 dissert 7 total	7 post-secondary		* school-to-work transitions (2) * opportunities to complete graduate school (1) * overall effects of post-secondary education (1) * loan use and higher education (1) * differences between older and younger students (1) * employment trends for recent PhDs (1)
• **early childhood education processes and outcomes?**	2 dissert	2 pre-school		* effects of participation in early childhood programs (2)
• **methodology?**	1 research	1 middle/sec		* construct validity of the self-concept items on the NELS (1)

Table 21
Characteristics of NAE/Spencer Fellows and AERA Research Grantees

Characteristic	Percent of group	
	Spencer fellows (n=252)	AERA research grantees (n=22)
Degree field:		
• Education	43%	61%
• Psychology	21	4
• Other social sciences (sociology, anthropology, economics, research methodology, and others)	24	30
• Humanities (history, philosophy, linguistics)	13	0
• Sciences (astronomy, chemistry, mathematics, and others)	0	4
Gender:		
• Female	57%	39%

Table 22
Degree-Granting Institutions of NAE/Spencer Fellows,
in Descending Order for Institutions with Two or More Fellows,
Compared to AERA Research Grantees

	# (%) of group	
Institution	Spencer fellows (n=228)	AERA grantees (n-23)
Harvard	46 (18%)	1 (4%)
Stanford	31 (12%)	---
Univ of Chicago	22 (9%)	4 (17%)
UC Berkeley	16 (6%)	1 (4%)
Univ of Michigan	11 (4%)	2 (9%)
Univ of Wisconsin	10 (4%)	1 (4%)
Michigan State Univ	7 (3%)	---
UCLA	7 (3%)	3 (13%)
Yale Univ	7 (3%)	---
Univ of Pittsburgh	5 (2%)	---
Princeton Univ	5 (2%)	---
Univ of Pennsylvania	5 (2%)	---
Univ of Illinois	5 (2%)	1 (4%)
Columbia Univ	5 (2%)	1 (4%)
Univ of Washington	4 (2%)	---
Cornell Univ	4 (2%)	---
Johns Hopkins Univ	4 (2%)	---
Brown Univ	3 (1%)	---
Univ of North Carolina	3 (1%)	1 (4%)
Carnegie Mellon Univ	3 (1%)	---
New York Univ	3 (1%)	---
Emory Univ	3 (1%)	---
Univ of Minnesota	3 (1%)	---
UC Santa Barbara	3 (1%)	2 (9%)
Univ of Southern California	3 (1%)	---
Oxford	2 (1%)	---
Univ of Toronto	2 (1%)	---
Univ of Maryland	2 (1%)	---
MIT	2 (1%)	1 (4%)
Univ of Texas	2 (1%)	---
Queens Univ, Toronto	---	1 (4%)
Kansas State Univ	---	1 (4%)
Southern Illinois Univ	---	1 (4%)
Univ of Wyoming	---	1 (4%)
SUNY at Buffalo	---	1 (4%)

Table 23
Statistical Institute Participants Recommendations for Improvement

Recommendation	Number	Percent (n=61)
Administration	**12**	**20%**
Give participants a list of readings prior to the institute, materials to take home, a hard copy of the software manual	6	10%
Assist in obtaining access to data bases	2	3%
Increase advertising, use smaller classes	2	3%
Run separate sessions for K-12 and higher education researchers, hold institutes in the summer	2	3%
Content	**18**	**30%**
Offer more advanced analysis, move faster, do more on technical issues, use more than one software package	12	20%
Limit scope, eliminate group project	2	3%
Offer more focus on policy, ensure participants come with policy question	4	7%
Method	**22**	**36%**
Use non-lecture teaching methods, more interaction among participants	4	7%
Increase duration, make it more intensive and more hands-on	13	21%
Offer more consultation, more staff, better follow-up	4	7%
Address software problems	1	2%
Overall quality	**5**	**8%**
Unclear	**4**	**6%)**

APPENDIX IV

Tables of Additional Evaluation Findings

Table 24
Survey Response Rates for Small Grants Recipients

Grant	Total	Returned after first round (A)	Resent	Returned after second round (B)	Resent	Returned after third round (C)	No forwarding information (D)
Research	77 (3)[42]	39	37	4	0	0	1
Dissertation	42 (1)[43]	22	18 (8)[44]	5	3	2	1
Totals	**119 (4)**	**61 + 18 more w/o CVs= 79**	**55**	**9 + 6 more w/o CVs = 15**	**3**	**2 + 2 more w/o CVs = 4**	**2**

A + B + C = Total surveys returned = 98
Response rate = 98 / 119 = 82%
Response rate (adjusted for D) = 98 / 117 = 84%

[42] Three of the 77 Research Grant surveys were sent out via email. One of the 3 was returned completed, also via email.
[43] One of the 42 Dissertation Grant surveys was sent out via email. This survey was returned completed, also via email.
[44] In this column, the number in parentheses indicates the number of surveys resent with new addresses.

Table 25
Survey Response Rates for Statistical Institute Participants

Year	Total	Returned after first round (A)	Resent	Returned after second round (B)	Resent	Returned after third round (C)	No forwarding information (D)
91	10	6	4	0	0	0	0
92	15 (1)[45]	1	13 (3)[46]	8	1	1	1
93	20 (1)[47]	8	10	3	2	1	0
94	27	15	8	4	2	1	3
95	25	13	5 (1)	2	4	1	3
96	24	12	10 (4)	4	1	2	1
97	20	8	11 (4)	4	2	1	1
98	19	16	3	2	0	0	0
Totals	**160**	**79**	**64**	**27**	**12**	**7**	**9**

A + B + C = Total surveys returned = 113
Response rate = 113 / 160 = 71%
Response rate (adjusted for D) = 113 / 151 = 75%

[45] One of the 15 1992 institute participant surveys was sent out via email. This survey was not returned.
[46] In this column, the number in parentheses indicates the number of surveys resent with new addresses.
[47] One of the 20 1993 institute participant surveys was sent out via email. This survey was completed and returned, also via email.

Table 26
Sources of Information about the Grants Program

Source of information	% responding	
	Small grants program (n = 98)	Statistical institutes (n = 113)
announcement in Ed Res	48	67
announcement in another professional publication	1[48]	3[49]
written information at AERA	16	6
written information at NCME	1	1
conversations at AERA / NCME	11	5
one of my professors	17	27
one of my colleagues	33	17
a conference presentation that credited this program as funder	7	1
a journal article that credited this program as funder	2	1
the internet	11	7
other	17	4

[48] ASA Footnotes
[49] I am a member of the AERA/NCME board or the Grants Board; from AERA mailings, an AERA listserve, a prior institute participant