

Feasibility Study  
for Conducting an

EVALUATION OF THE  
NIA SUMMER INSTITUTE ON AGING RESEARCH

Submitted to the  
National Institute on Aging  
National Institutes of Health

by  
Carlyn Consulting

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## Introduction

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The National Institute on Aging (NIA), one of the 27 institutes and centers of the National Institutes of Health (NIH), is seeking NIH One Percent Evaluation Set-Aside funds to conduct an outcome evaluation of the NIA Summer Institute on Aging Research, an intensive one-week research training program which has been held each summer since 1987 at the Aerie Conference Center in Warrenton, Virginia. The overall purpose of the NIA Summer Institute is to facilitate the recruitment and retention of emerging scientists interested in pursuing aging research. The following proposal for a phase 2 outcome evaluation incorporates the results of a phase 1 feasibility study aimed at determining the optimal design for the phase 2 evaluation of the NIA Summer Institute. The feasibility study was conducted from May 2002 to April 2003 by Carlyn Consulting and directed by Marcia Carlyn, Ph.D., who is experienced in evaluation design and methodology as well as NIH research and research training programs.

A major component of the feasibility study was the development of a conceptual framework to illustrate how the NIA Summer Institute is intended to work. The conceptual framework and overall design of the outcome evaluation were revised several times during the feasibility study based on:

- Discussions with the Assistant to the Director for Special Populations and other NIA staff.
- A review and analysis of NIA program documents (e.g., program announcements of the Summer Institute; application review criteria and scoring procedures; Summer Institute agendas; lists of participants attending each Summer Institute; applications, CVs, and research abstracts submitted by participants during the selection process; assessment forms completed by participants on the final day of each Institute).
- Direct observation over several days of the NIA Summer Institute and another NIA-funded summer institute (held in Duluth, Minnesota) that has been operating for several years.
- A pilot study designed to identify an appropriate comparison group of individuals similar to the NIA Summer Institute participants and assess how difficult it is to identify the research accomplishments of the individuals in both groups.

The pilot study focused on the Institute participants in the 1991 and 1997 cohorts and included queries of the NIH IMPAC II and CRISP systems, collecting data from four membership directories of the American Gerontological Society (AGS), and a variety of web searches for the purpose of identifying relevant information about the Institute participants in the two cohorts.

The most challenging issues of the feasibility study were:

1. Addressing the problem of missing program records for some of the earlier Summer Institutes.
2. Identifying an appropriate control group whose success in becoming NIH-sponsored researchers could be compared with the performance of the Summer Institute participants.

Regarding the problem of missing records, discussions with current NIA staff and a thorough search of Summer Institute documents retrieved from NIA's long-term storage revealed that the following documents from past Summer Institutes are not available:

- Summer Institute agendas for 1987, 1988 and 1994.
- Participant research abstracts prior to 1992.
- Participant applications and curriculum vitae (CVs) prior to 1996.
- Institute assessment forms completed prior to 1996.

These archival documents were either destroyed or were improperly labeled when sent to storage, which necessitated revising the original study design to accommodate the missing data. The result was a reduction in the number of variables to be included in the study design and a decision to have the full-scale evaluation focus exclusively on outcome rather than process.

Regarding the identification of a control group, five other NIA-funded summer training programs with goals similar to those of the NIA Summer Institute were assessed:

- Research Training in Psychology of Aging, a three-part training program for college and university faculty which consists of an initial ten-day summer institute at the College of St. Scholastica in Duluth, Minnesota, a three-day followup meeting in February, and a five-day followup institute the next summer. Its aim is to expand the pool of behavioral scientists engaged in aging research.
- Minority Aging Network in Psychology (MANIP), a week-long training program sponsored by the American Psychological Association for undergraduate and graduate students in the field of psychology, held at the University of Southern California and designed to increase the pool of ethnic minority researchers of gerontology.
- Summer Training Workshop on African American Aging Research, a three-day training program at the University of Michigan, aimed at mentoring predoctoral and postdoctoral students of various cultural backgrounds who are committed to conducting African American aging research.
- RAND Summer Institute on Aging, a set of two conferences held in Santa Monica, California (a two-day MiniMedical School for Social Scientists, and a two-day Workshop on the Demography, Economics, and Epidemiology of Aging), both aimed at junior faculty, NIA predoctoral trainees, and NIA postdoctoral trainees who wish to increase their understanding of biomedical, demographic, and policy issues related to aging.

- Summer Institute on Geriatrics, a week-long conference at Boston University Medical Center designed for medical students who are interested in pursuing careers in academic geriatric medicine and geriatric research.

Although each of these summer training programs is focused on aging research, it was decided that most were not sufficiently comparable to the NIA Summer Institute because they were of shorter duration and/or included predoctoral and/or undergraduate students. The Duluth institute was judged to be the most comparable and a site visit was conducted by the project director to assess whether the participants who attended the Duluth institute could be used as a comparison group for the full-scale evaluation. After two days' observation of the Duluth institute and three days' observation of the NIA Summer Institute (which included informal discussions with most of the participants and about one-third of the faculty), it was concluded that although the two training experiences are similar with respect to the type of training activities offered and high quality learning experience, they are not comparable in other ways. The Duluth institute is limited to 15 participants per cohort (less than half the size of the NIA Summer Institute cohorts); it is a more intensive training experience, requiring participants to attend a total of 18 days over the course of a year (compared to the seven-day NIA Institute); and it is focused on behavioral research (a narrower focus than the NIA Institute which addresses biological, clinical, and behavioral research). Also, although the Duluth participants are often farther along in their academic careers, many are college teachers who have less research experience than the participants of the NIA Summer Institute.

For these reasons, it was decided that none of the NIA-funded summer training programs offered an appropriate comparison group and another group of individuals should be identified, if possible. The comparison group that was selected is described in Section 4.

In summary, the feasibility study produced the following documents:

- A conceptual framework for the outcome evaluation.
- An operational definition of each variable identified in the conceptual framework.
- Recommended data sources for obtaining information on the variables, most of which involve secondary data previously collected for other purposes.
- A set of five study questions to be answered as part of the evaluation.
- Recommended data collection and data analysis strategies to be used in answering each study question.
- Graphs showing how the NIA Summer Institute evolved from 1987 to 2002 with respect to the number and type of participants, number of NIH and non-NIH faculty, the percent of faculty who had participated in a previous Institute, and the time allocated to different activities during the course of the week.
- A proposed budget and timeline for the phase 2 evaluation.

Each of these products is described in the present proposal.

## Section 1: Program to be Evaluated

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The National Institute on Aging, established at NIH in 1974 under a Congressional mandate, leads a broad scientific effort to understand the nature of aging and to extend the healthy, active years of life. In addressing its mission to improve the health and well-being of older Americans through research, NIA sponsors a variety of educational programs designed to train and develop highly skilled research scientists from all population groups with the expertise to conduct high quality research on aging processes, age-related diseases, and special problems and needs of the aged.

### Summer Institute on Aging Research

The Summer Institute on Aging Research, which has been held each summer since 1987 (usually in July), offers emerging researchers an intensive one-week experience focused on the critical issues and challenges involving research on aging. Emerging researchers are defined as those who have received an M.D., Ph.D. or other doctoral degree in the biological, clinical, or behavioral sciences, are at the beginning stages of a research career, and demonstrate a potential for becoming a highly productive independent researcher. Announcements for each year's Institute are posted on the NIA website, published in scientific journals on aging, distributed (via listservs and targeted mailings) to a broad group of researchers interested in aging research and research training. Applications, which are due in early March, are reviewed for completeness and then evaluated by members of the NIA Work Group on Minority Aging. Reviewers rate the applications using specific review criteria and assign an overall score. Scores from each reviewer are averaged to generate a rank-ordered list of applicants, and final selections are made from this list to ensure high quality and diversity among the participants. From 1987 to 2002, a total of 592 emerging researchers attended an NIA Summer Institute, an average of 37 participants per year (see Exhibit 1). A majority of the participants had completed a postdoctoral program prior to attending the Institute.

All of the Summer Institute participants' expenses are covered by NIA, including their transportation, room and board, and workshop materials. Although the budget for the Summer Institute program has risen through the years with the increase in the number of participants, it has remained relatively modest (\$\_\_\_\_\_ in FY 2002), largely due to the small number of staff. The average number of NIA staff hours allocated each year to planning and overseeing each Summer Institute has remained at approximately \_\_\_ full-time equivalent employees (FTEs) since its inception in 1987. The Assistant to the Director for Special Populations is responsible for planning and oversight activities along with her other programmatic responsibilities. Additional support is provided as needed by a program analyst and administrative assistant, by the NIA Work Group on Minority Aging, and by NIH senior administrators and researchers (primarily from NIA) and outside researchers who serve as Institute faculty.

Most of the faculty spend at least two days at the Summer Institute, serving in several roles (e.g., giving lectures and seminars, leading group discussions, and consulting with participants on their individual research interests). The total number of Institute faculty has grown from an average of 24 in 1987-1995 to 31 in 1996-2002 (see Exhibit 2). Beginning in 1996, the number of NIH

faculty increased and is now about equal to the number of invited faculty from other organizations. There was also an increase in 1996 in the percent of faculty who had participated in a previous Summer Institute, which rose from 22% in 1987-1995 to 61% in 1996-2002 (see Exhibit 3). Their experience at previous Institutes has proven to be very helpful in terms of their familiarity with the curriculum, their fellow faculty members, and the types of participants. Of the NIH faculty, approximately 80% work at the National Institute on Aging.

### **NIA Planning and Oversight Activities**

The feasibility study found that the Assistant to the Director for Special Populations (with assistance from other NIA staff) is responsible for the following six types of planning and oversight activities:

- Planning a state-of-the-art curriculum for each Summer Institute.
- Recruiting highly qualified Institute faculty.
- Disseminating information about the Institute.
- Ensuring that the application review process and selection of participants is equitable.
- Efficiently managing day-to-day operations and communications.
- Informing former participants about new grant opportunities and consulting with those who contact NIA for professional advice.

As part of the feasibility study, a thorough review was conducted of all available data involving these activities. It was found that the time allocated to different activities during the course of the week had not changed much since the inception of the program in 1987, except for the introduction of mock NIA grant reviews in 1995 and increased time devoted to this activity starting in 1997 (see Exhibit 4). Although the review indicated that all of the planning and oversight activities currently appear to be implemented very well, it also revealed that it is not feasible (given the available data) to evaluate how well each of these activities has been conducted since the inception of the program in 1987. It was therefore decided that the phase 2 evaluation would be an outcome evaluation rather than a process evaluation, and would focus on the achievement of the program's short-term, intermediate, and long-term goals.

### **Program Goals**

The overall purpose of the NIA Summer Institute is to facilitate the recruitment and retention of emerging scientists interested in pursuing aging research. To achieve this purpose, NIA has focused on the participants' achieving three short-term, three intermediate, and three long-term goals. The following *short-term goals* are expected to be achieved within two years after attending the Summer Institute:

- Presenting research findings at conferences on aging.
- Publishing in peer-reviewed journals.
- Applying for an NIH grant (any type).

The following *intermediate goals* are expected to be achieved within five years after attending the Summer Institute:

- Securing a tenure-track position (or equivalent) that supports the conduct of aging research.
- Receiving an NIH grant (any type), NIH minority supplement, or non-NIH grant.
- Applying for a competitive NIH research project grant (RPG).<sup>1</sup>

The following *long-term goals* are expected to be achieved within eight years after attending the Summer Institute:

- Receiving one or more competitive NIH research project grants.
- Being recognized for expertise in aging research.
- Serving as a mentor for new researchers on aging.

A major component of the feasibility study was the development of a conceptual framework for the evaluation, which includes the nine goals (outcome variables) as well as a set of predictor variables (NIA resources and characteristics of individual participants) that may be related to subsequent success in achieving the goals (see Exhibit 5). The five study questions to be answered during the phase 2 evaluation (which are presented in Section 3) focus on the variables in the conceptual framework.

## Section 2: Need for an Evaluation

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### Type of Evaluation and Primary Purpose

An outcome evaluation is proposed for the primary purpose of determining the extent to which the individuals who attended an NIA Summer Institute from 1987 to 2002 achieved each of the program goals. Although there has not been sufficient time for many of the participants in the more recent cohorts to have achieved the intermediate and long-term goals, these cohorts will be included in the analysis to enhance our understanding of the average time required for emerging scientists to succeed in the various areas.

### Use of Results

The evaluation results are needed by NIA program administrators to assess the extent to which the Summer Institute has achieved its goals and to obtain current data for tracking the participants' future progress. The results will also be useful to IC training officers and administrators across NIH as well as individuals in other government agencies and organizations who oversee similar training programs. Promoting the development of a talent base of well qualified, highly trained, and diverse scientific investigators is one of NIH's major long-term objectives, but there have been few studies of the participants' outcome. The present evaluation

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<sup>1</sup> RPGs include activity codes R01, R03, R15, R21, R22, R23, R29, R33, R35, R37, R55, RC1, P01, P42, U19, and UC1 (for NIGMS, P41 and U01), and exclude FIC (prior to FY 1994), NCRR (FY 1984-89), and NLM (all years).

will address a clear need to conduct such a study and test a methodology for tracking the subsequent research achievements of the participants, which will be designed to be transportable to other NIH research training programs.

### **Review of the Literature**

In addition to the extensive review of NIA program documents relevant to the Summer Institute, the feasibility study included a review of several major studies assessing the challenges and outcomes of different types of research training programs, including *The Early Career Progress of NRSA Predoctoral Trainees and Fellows* (Georgine M. Pion, 2001), *Addressing the Nation's Changing Needs for Biomedical and Behavioral Scientists* (National Research Council, 2000), and "Minorities in Science: The Pipeline Problem" (*Science*, November 1992). The literature review emphasized the importance of developing clear criteria for measuring program success and tracking the subsequent achievements of program participants to ensure program accountability and improve the research training experience. The proposed evaluation is designed to accomplish these objectives.

### **Timeliness of the Evaluation**

Since the first NIA Summer Institute on Aging Research was held in 1987, NIA staff have not attempted to track former participants and there has been no formal evaluation of how successful the program has been in achieving its goals. Given the length of time the Summer Institute has been in operation, its similarity to other NIH short-term research training programs, and the importance of accountability, the need for an outcome evaluation is clear. In addition,

## **Section 3: Evaluation Design**

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### **Conceptual Framework**

As mentioned in Section 1, the feasibility study included the development of a conceptual framework to illustrate how the NIA Summer Institute on Aging is intended to work (Exhibit 5). The framework shows how funding and staff resources provided by NIA and differences among the Institute participants may be related to their subsequent achievement of the program's short-term, intermediate, and long-term goals.

### **Study Questions**

The Evaluation of the NIA Summer Institute on Aging Research will answer five broad study questions:

1. Historically, what has been the average cost per participant for the NIA Summer Institute on Aging Research? Has the average cost per participant (in FY 2002 dollars) been higher or lower than other short-term research training programs supported by NIA?



2. What percentage of Summer Institute participants were successful in achieving the program's short-term, intermediate, and long-term goals within two years? Within five years? Within eight years?
3. Are certain characteristics of individual participants related to their future success in achieving the program's goals?
4. Have the participants who attended a more recent Summer Institute (during 1996–2002) been more (or less) successful in achieving the program's short-term goals than those who attended an earlier Institute (during 1987–1995)?
5. Have the Summer Institute participants been more (or less) successful in competing for NIH research project grants (RPGs) than similar individuals who did not attend the Institute?

### **Target Population**

The target population for the outcome evaluation is the universe of participants who attended an NIA Summer Institute on Aging Research during 1987–2002. The unit of analysis is an individual participant. The feasibility study revealed that the number of participants has increased in recent years from an average of 31 in 1987-1995 to 41 in 1996-2002 (see Exhibit 1). Interestingly, the percent of participants having a physician scientist degree (M.D., M.D./Ph.D., or D.O. degree) has declined, from an average of 39% in 1987-1995 to 22% in 1996-2002 (see Exhibit 6). The decline in physician scientists is probably due to an increased demand on physicians' time during the summer months in the emerging managed care environment and a trend among physicians toward research specialization (e.g., genetics, sports medicine) rather than the more general field of aging research.

### **Key Variables**

To answer the study questions, data will be collected for each of the 16 variables shown in the conceptual framework. The variables are categorized as follows:

- NIA resources (2 variables)
- Characteristics of individual participants (5 variables)
- Short-term goals (3 variables)
- Intermediate goals (3 variables)
- Long-term goals (3 variables).

Detailed information on each of the variables is presented in Exhibit 7, including the variable's operational definition and the recommended data sources.

## **Section 4: Data Collection and Analysis**

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### **Data Sources**

A variety of potential data sources were examined during the feasibility study for each of the variables in the conceptual framework. Nearly all of the data sources selected were archival in

nature, involving data previously collected for other purposes. As mentioned in the Introduction, many of the archival documents pertaining to the earlier Summer Institutes are not available, a fact which was taken into account in the design of the phase 2 evaluation. The recommended data sources are listed in Exhibit 7 and include the following:

- Summer Institute agendas (except for 1987, 1988 and 1994).
- Participant research abstracts from 1992 to the present.
- Participant applications and curriculum vitae (CVs) from 1996 to the present.
- NIA program documents, including NIA budget figures (1987-2002).
- Consolidated Grant Applicant File (CGAF).
- Trainee and Fellow File (TFF).
- IMPAC II system.
- CRISP database of federally funded biomedical research projects.
- NSF Master Database of Proposals and Awards.
- PubMed publications database.
- Conference proceedings and directories and professional associations promoting aging research, such as the Gerontological Society of America (GSA).
- A variety of web searches to locate information about the professional achievements of each of the Summer Institute participants.
- Discussions with NIA staff.

### **Data Collection Strategies**

The bulk of the data collection efforts will involve gathering specific information about each of the individual participants who attended an NIA Summer Institute (1987-2002). Three basic strategies will be used:

- Document reviews (e.g., participant applications, CVs, research abstracts, GSA proceedings and directories).
- Web searches.
- Database extraction (e.g., extracting data from the CGAF, TFF, IMPAC II system, CRISP database, NSF grants database, and the PubMed publications database).

After as much information as possible has been gathered using secondary data sources, additional data may be collected through informal discussions with NIA staff and a short communication from the Assistant to the Director for Special Populations (who oversees the NIA Summer Institute) to each of the Institute participants whose professional achievements could not be tracked via web searches (although their current email or street address was available in the public domain). Specifically, they will be asked to send NIA a copy of their most recent CV (as an email attachment if possible), emphasizing that their participation is entirely voluntary and any information they provide will be kept confidential and used only to help evaluate the NIA Summer Institute. The wording of this request and the safeguards that will be used to protect all of the evaluation data will be consistent with the umbrella system of records covering participants in programs of the Public Health Service (system 09-25-0156). Because the evaluation does not involve the general public and because no surveys or interviews will be conducted, OMB clearance should not be required.

## **Data Integrity**

Several different approaches and data sources were used in the feasibility study to identify the subsequent research accomplishments of the individuals in the 1991 and 1997 cohorts and comparison group. To reduce the chance that the results will be biased and enhance the validity of the findings, every effort will be made to locate and identify the research accomplishments of each Institute participant (particularly their RPG success) as well as the RPG success of the NRSA trainees in the comparison group. The pilot web searches located 79% of the 1991 cohort and 95% of the 1997 cohort, and identified subsequent RPG success for 100% of these participants and 100% of the comparison group.

## **Ethical Considerations**

All information about individual Institute participants that is not already in the public domain will be kept confidential and safeguarded in accordance with the Privacy Act of 1974. Published findings of the evaluation will be presented as summaries of aggregated data and the participants will not be identified by name or position. Because the CGAF, TFF, and IMPAC II systems are covered by the Privacy Act, authorization to use these files will be obtained from NIH before the analyses are conducted. Permission will also be obtained to use the NSF Master Database of Proposals and Awards.

## **Data Preparation**

Relevant information from the document reviews, website searches, and database extractions will be identified, coded (if appropriate), and entered into an evaluation database designed to summarize the data collected for each individual with respect to the different variables in the study's conceptual framework. User-friendly input screens for collecting different types of data will be designed to expedite data entry, and standard data verification procedures (such as input masks) will be developed to validate the data entered and maximize the integrity of the database.

## **Data Analysis**

A variety of analytical techniques will be used to answer the five study questions, including descriptive statistics and (where possible) inferential statistics, with 95% confidence intervals employed to test for significance. Missing values will be excluded from the analyses. Specific strategies for addressing each study question are presented below.

*Study Question 1: Historically, what has been the average cost per participant for the NIA Summer Institute on Aging Research? Has the average cost per participant (in FY 2002 dollars) been higher or lower than other short-term research training programs supported by NIA?*

The phase 2 evaluation will examine the extent to which the average cost per participant changed during the program's first 16 years or the extent to which the cost was comparable to other short-term training programs. Although no other NIA-funded training programs was found to be sufficiently comparable to the Summer Institute program to be used as a control group, the average cost per participant for each of the five NIA training programs having goals similar to those of the Summer Institute (listed in the Introduction) will be compared with the average cost per participant for the Summer Institute from FY 1998 to FY 2002. Data sources will be NIA

budget figures and other program documents, the CGAF and IMPAC II system, and discussions with the NIA Training Officer. Descriptive statistics and graphs showing trends through time will be used to answer the study question.

*Study Question 2: What percentage of Summer Institute participants were successful in achieving the program's short-term, intermediate, and long-term goals within two years? Within five years? Within eight years?*

Study Question 2 will be answered by calculating the percent of participants in the 1987-2001 cohorts who achieved each of the three short-term goals within two years after attending the Institute. Similarly, the percent of participants in the 1987-1998 cohorts who achieved each of the intermediate goals within five years and the percent of participants in the 1987-1995 cohorts who achieved each of the long-term goals within eight years will be determined. The percent who achieved each goal at *any* time will also be calculated. In addition, an *overall success score* will be generated for each participant based on his/her achievement of each of the program goals; the algorithm for calculating this summary score may use different weights for different goals, as judged appropriate by program staff and the project advisory committee. A variety of data sources will be used for each outcome variable, as shown in Exhibit 7. Additional analyses will be conducted to determine the percent of Summer Institute participants who applied for different types of NIA grants, the percent who were successful, and the percent whose research involved minority aging and health disparities. Graphs showing trends through time will also be produced.

*Study Question 3: Are certain characteristics of individual participants related to their future success in achieving the program's goals?*

The feasibility study found that the following four types of individual characteristics, which may be related to subsequent research success, are available for a clear majority of the Summer Institute participants:

- Age group.
- Sex (male or female).
- Type of doctoral degree (physician scientist or not).
- Previous research experience as a trainee on an institutional NRSA training grant.
- Interest in research involving minority aging and health disparities.

The question of whether to also include the participants' race/ethnicity as a demographic characteristic was given careful consideration because NIA strongly encourages minority investigators to apply to the Summer Institute and a participant's ethnicity is known in most cases because it is an optional item on the Summer Institute application. However, it was decided not to include race/ethnicity as one of the participant characteristics to be directly examined because of the sensitivity of the data and the fact that the applications prior to 1996 are not available. Instead, it was decided to focus on whether or not participants had specified an interest in research involving minority aging and/or health disparities, information which is available from the participants' research abstracts, which were first required in 1992. Criteria developed by the NIA Work Group on Minority Aging will be used to code each abstract with respect to whether or not it involves minority-related research. The recommended data sources

for the other characteristics will be the participants' applications and CVs, other NIA program documents, and the IMPAC II system.

To answer Study Question 3, Pearson product moment correlation coefficients will be computed to examine the relationship between each of the participant characteristics and future success in achieving the different program goals, taking into account that the more recent cohorts have had less time to achieve the intermediate and long-term goals. Regression analysis will also be conducted to examine the contribution of each of the participant characteristics to overall success (using the overall success score generated for each participant as the dependent variable).

*Study Question 4: Have the participants who attended a more recent Summer Institute (during 1996–2002) been more (or less) successful in achieving the program's short-term goals than those who attended an earlier Institute (during 1987–1995)?*

This question was included because the feasibility study revealed several differences between the earlier and later Institutes. The more recent Institutes have had a higher number of participants and faculty, a lower percentage of physician scientists, a higher percentage of returning faculty, and the inclusion of mock NIA grant reviews in the curriculum (as shown in Exhibits 1-4 and 6). Also, the Assistant to the Director for Special Populations was appointed in 1997 to plan and oversee the NIA Summer Institute program, which had previously been the responsibility of the \_\_\_\_\_. Given these changes, which all occurred around 1996-1997, it was decided that a comparison of the success of the earlier and more recent participants would be useful to program administrators, focusing primarily on their achievement of the program's short-term goals.

To answer Study Question 4, dichotomous scores indicating whether or not a participant achieved each goal will be generated as well as continuous scores indicating his/her level of achievement (e.g., number of peer-reviewed publications during the two-year period). Chi-squared tests and two-tailed *t*-tests will be used to test for significant differences between the participants who attended an Institute in 1987-1995 and those who attended an Institute in 1996-2002. Data sources will include the CGAF, IMPAC II system, PubMed publications database, GSA and AGS conference proceedings, web searches, and participant CVs.

*Study Question 5: Have the Summer Institute participants been more (or less) successful in competing for NIH research project grants (RPGs) than similar individuals who did not attend the Institute?*

The pilot study found that about 40% of the participants who attended the 1991 and 1997 Summer Institutes (41% of the 1991 cohort and 38% of the 1997 cohort) had previously received support as a predoctoral and/or postdoctoral trainee on a T32 or T35 institutional NRSA training grant, and it was possible to identify a trainee on the same grant who "matched" the Institute participant. The selection criteria for the comparison group, listed in order of importance, were:

- Serving on the training grant during the same year as the SI participant;
- Being at the same educational level (postdoctoral or predoctoral level);
- Having the same major field of study;
- Having the same previous degrees; and
- Being of the same sex.

A second analysis revealed that the trainees who attended the 1991 and 1997 NIA Summer Institute were more likely than their “matching” trainees to join the Gerontological Society of America (46% vs. 24%). It was concluded, however, that even if the trainees in the comparison group are less interested in research on aging, the individuals in the two groups should be comparable with respect to the likelihood of their receiving an RPG grant in *any* research area, which is an important long-term goal of both the NRSA program and the NIA Summer Institute. A third analysis found that

To answer Study Question 5, TFF analyses will be conducted to identify the Institute participants who had previously served on one or more predoctoral or postdoctoral institutional NRSA training grants. If a participant served on more than one training grant, the most recent one will be selected. The TFF will also be used to identify the other trainees on the grant and their key characteristics, one of whom will be selected as a “matching” trainee using the five criteria mentioned above. Descriptive statistics will be produced to show the comparability of the two groups with respect to these characteristics, and CGAF analyses will be conducted to determine the grant history of the individuals in the two groups. Based on the pilot findings, it is expected that  $n > 200$  for each group. Yates’ chi-squared test and two-tailed *t*-tests will then be conducted to determine whether the NRSA-trained Institute participants were more successful in competing for RPG grants (and other types of NIH grants) than similar NRSA-trained individuals who did not attend an NIA Summer Institute.

## Section 5: Evaluation Results

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### Products of the Evaluation

The results of the Evaluation of the NIA Summer Institute on Aging Research will be presented to NIA in a draft report. Following an introduction and a background section summarizing the program, the findings for each of the five study questions will be described. Wherever possible, analytical results will be presented in tables and graphs designed to highlight the study’s findings. The conclusion of the report will include recommendations for enhancing future Summer Institutes and a proposed methodology for tracking the research achievements of the participants of any NIH research training program. After the draft report has been reviewed by NIA staff and the NIA Work Group on Minority Aging, a final report for the evaluation will be produced.

### Dissemination of Results

The primary audience for the final report will be NIA program administrators (particularly those responsible for research training programs), members of the NIA Work Group on Minority Aging, and other IC training officers and administrators involved with similar research training programs. The final report will also be disseminated to a broader audience (perhaps as a PDF file accessible via the NIA website), based on the recommendations of the NIA Work Group on Minority Aging.

## **Section 6: Project Management**

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### **Project Implementation**

The Evaluation of the NIA Summer Institute on Aging Research will be conducted by an independent contractor who will be selected in accordance with NIH policies. The evaluation team must have expertise in program evaluation, data management, and statistical analysis; experience using the CGAF, TFF, IMPAC II system, and CRISP database; and a solid knowledge of NIH research training programs. If possible, the evaluation team should also have experience conducting outcome evaluations for other ICs.

### **Advisory Committee**

The NIA Work Group on Minority Aging will serve as the project advisory committee for the phase 2 evaluation. The members of the Work Group are very familiar with the Summer Institute and already serve in an advisory capacity. The group's members include the Assistant to the Director for Special Populations, NIA Deputy Director, NIA Training Officer, and the four Associate Directors (or their designees) representing each of the NIA extramural programs. If needed, an individual with expertise in program evaluation, NIH data files, and statistical methods will be included on the project advisory committee.

### **Estimated Timeline for the Evaluation**

It is expected that the Evaluation of the NIA Summer Institute on Aging Research will require 12 months to complete, following a one- to two-month period to obtain One Percent Evaluation Set-Aside funding and to select the contractor. Work will hopefully begin in August 2003 and be completed in July 2004. A proposed timeline for performing the major evaluation tasks is presented in Exhibit 8.

## **Section 7: Budget Estimate**

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### **Estimated Cost**

The anticipated cost of the Evaluation of the NIA Summer Institute on Aging Research is \$93,700, with most of the budget allocated to direct labor costs. A three-person evaluation team is envisioned, consisting of a senior evaluation expert, a senior programmer with extensive CGAF and TFF experience, and a data analyst. A detailed budget estimate and anticipated funding sources are shown in Exhibit 9.

Exhibit 1  
NIA Summer Institute on Aging Research 1989-2002

**Number of Summer Institute Participants**

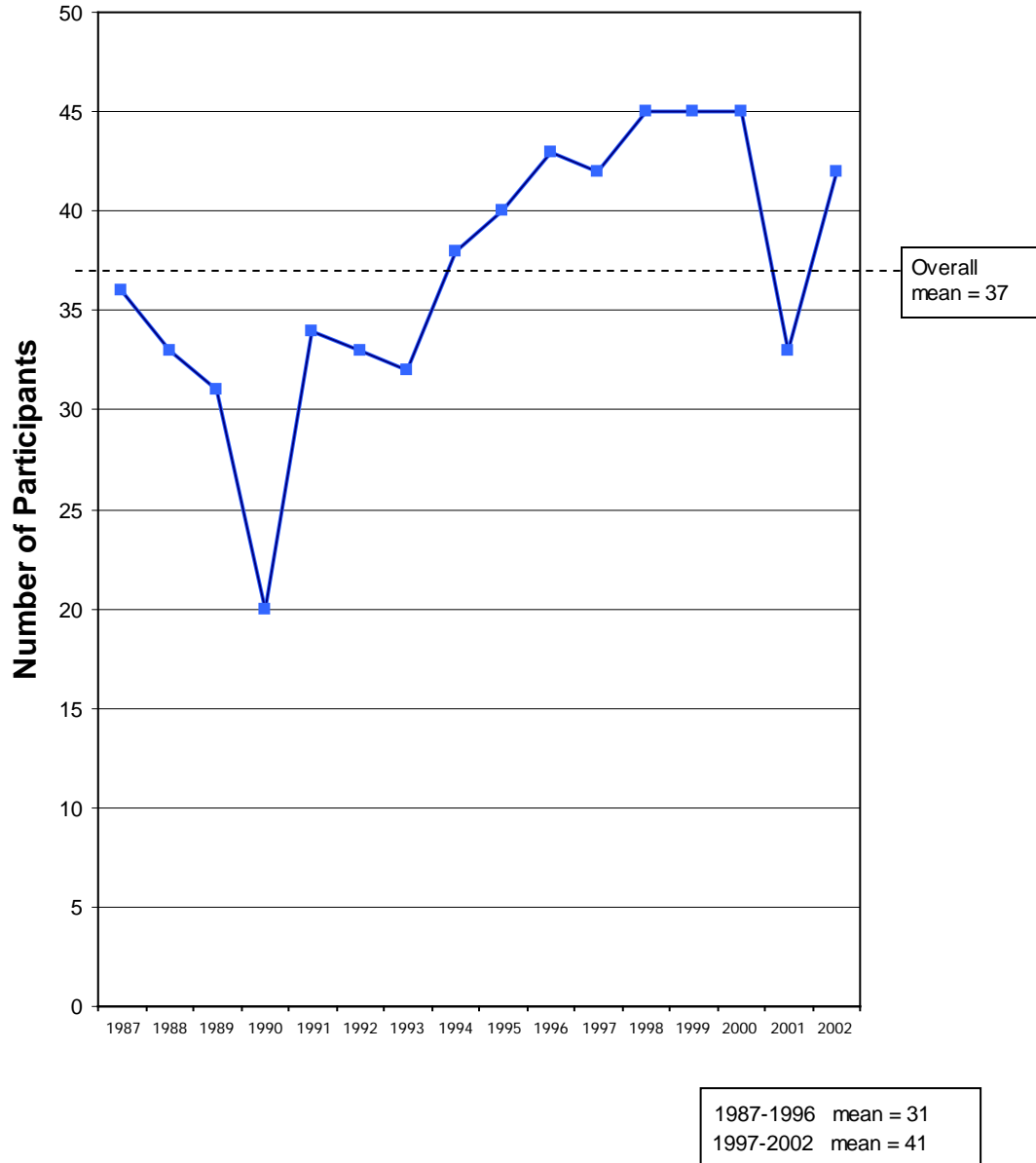
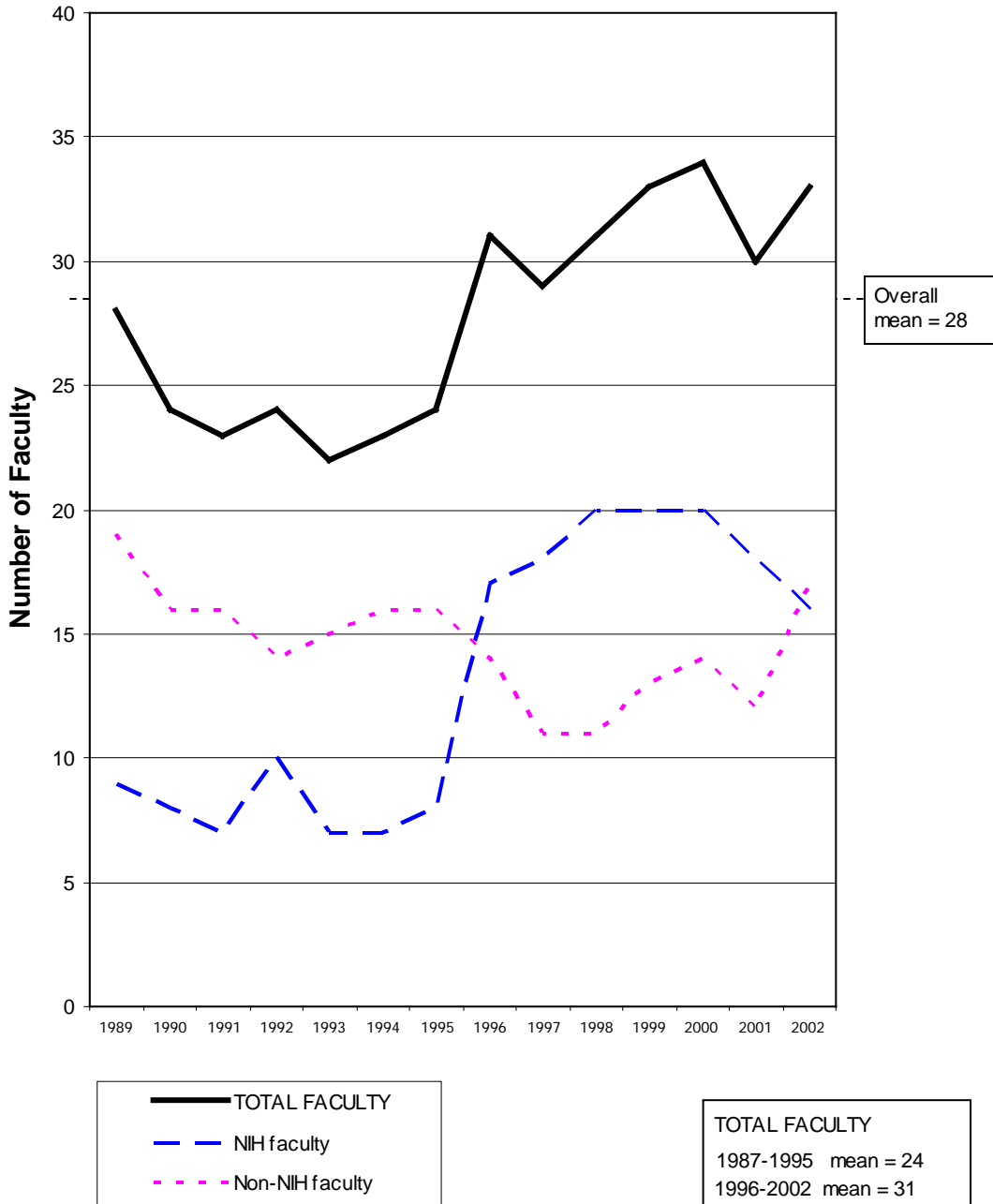




Exhibit 2  
 NIA Summer Institute on Aging Research 1989-2002

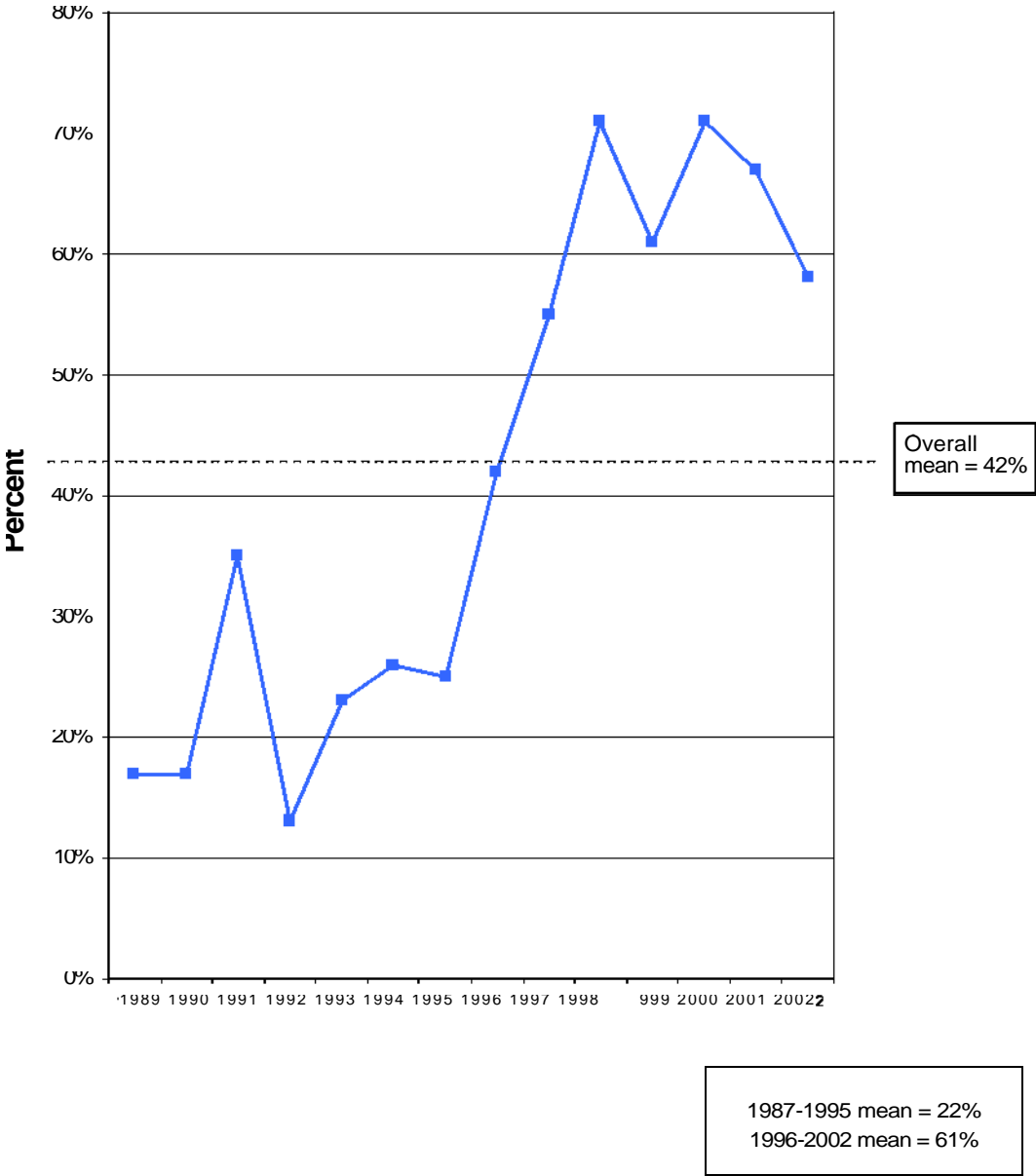
**Number of Summer Institute Faculty**



Note: Because the agenda for the 1994 Summer Institute was not available, estimates were calculated for 1994 by averaging 1993 and 1995 data.

Exhibit 3  
NIA Summer Institute on Aging Research 1989-2002

**Percent of Faculty Who Had Participated  
in a Previous NIA Summer Institute**

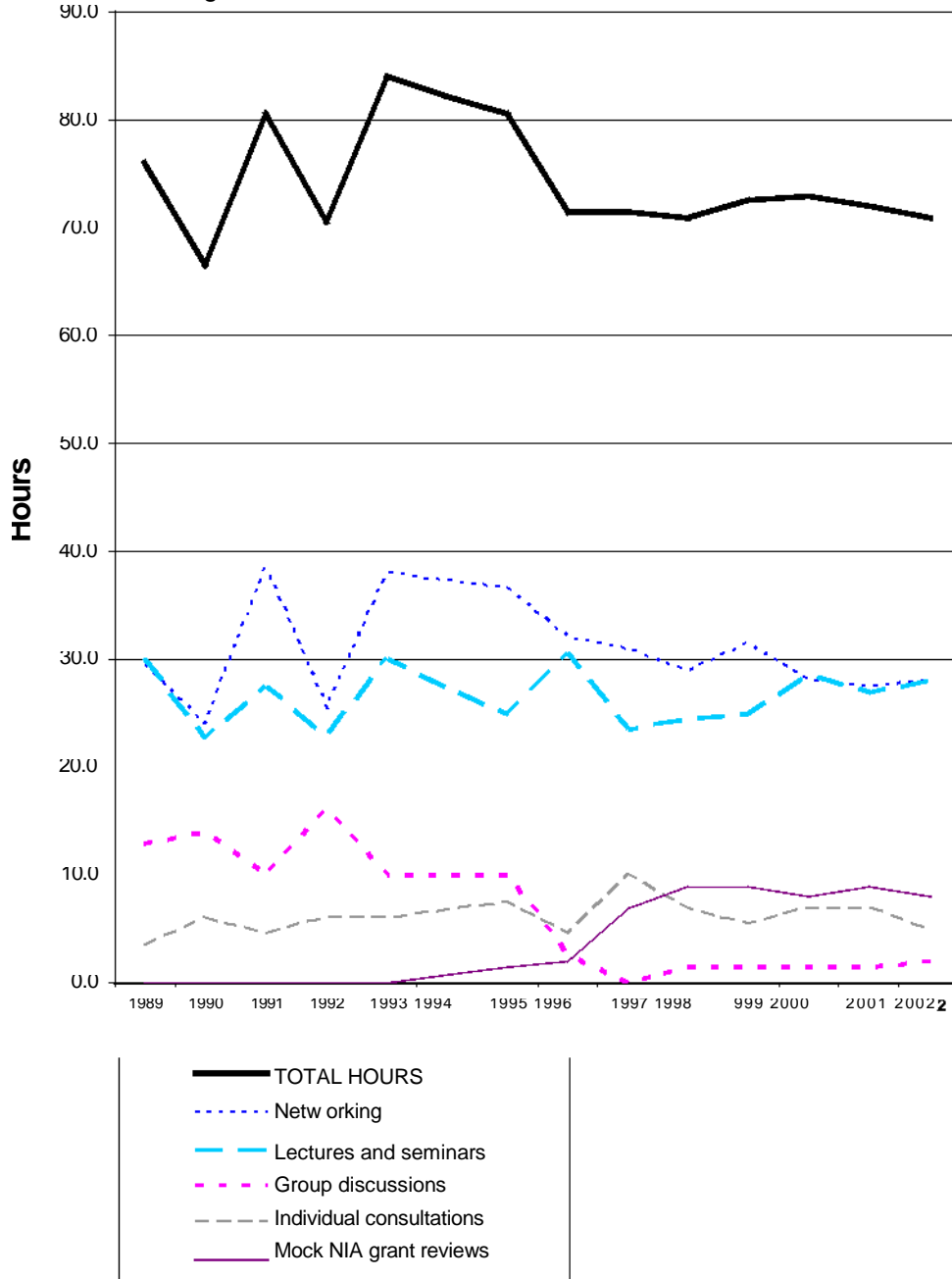


Note: Because the agenda for the 1994 Summer Institute was not available, estimates were calculated for 1994 by averaging 1993 and 1995 data.

Exhibit 4  
 NIA Summer Institute on Aging Research 1989-2002

**Time Allocated to Different Activities**

Note: Because the agenda for the 1994 Summer Institute was not available, estimates were



calculated for 1994 by averaging 1993 and 1995 data.

Exhibit 5

Evaluation of the NIA Summer Institute on Aging Research

**CONCEPTUAL FRAMEWORK**

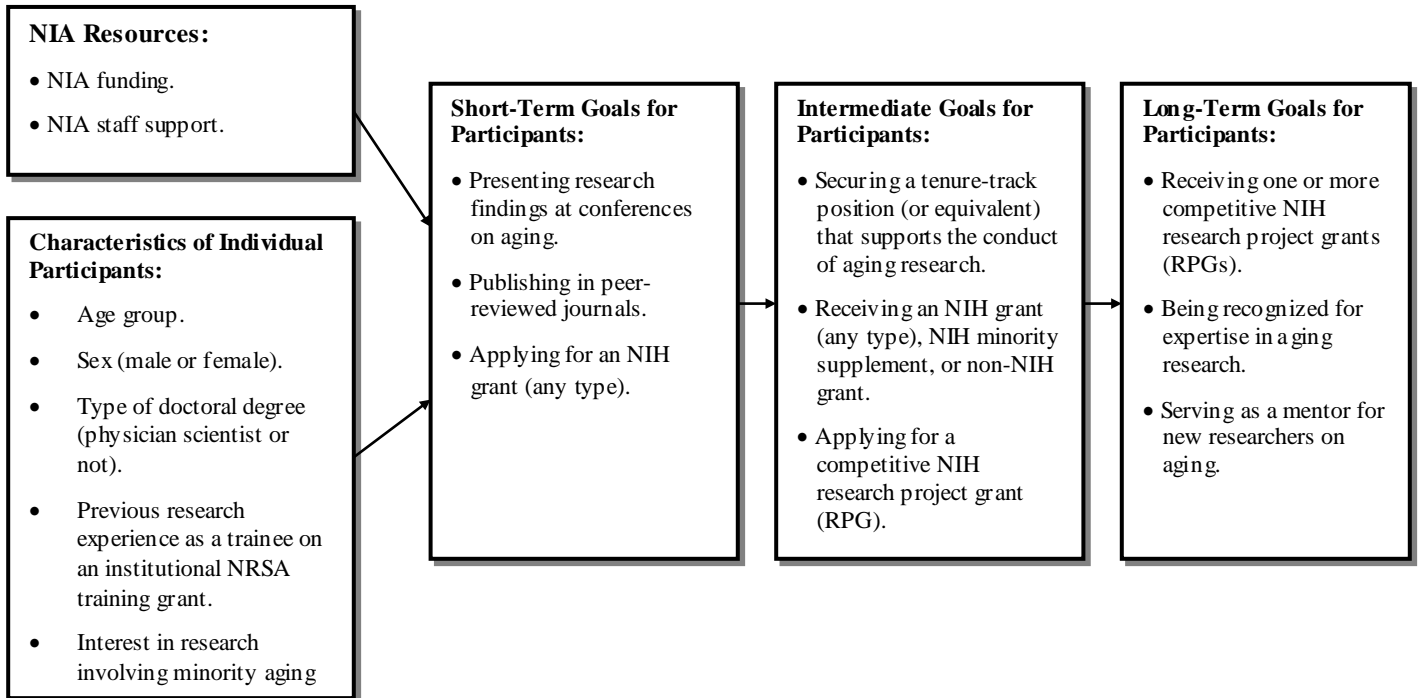
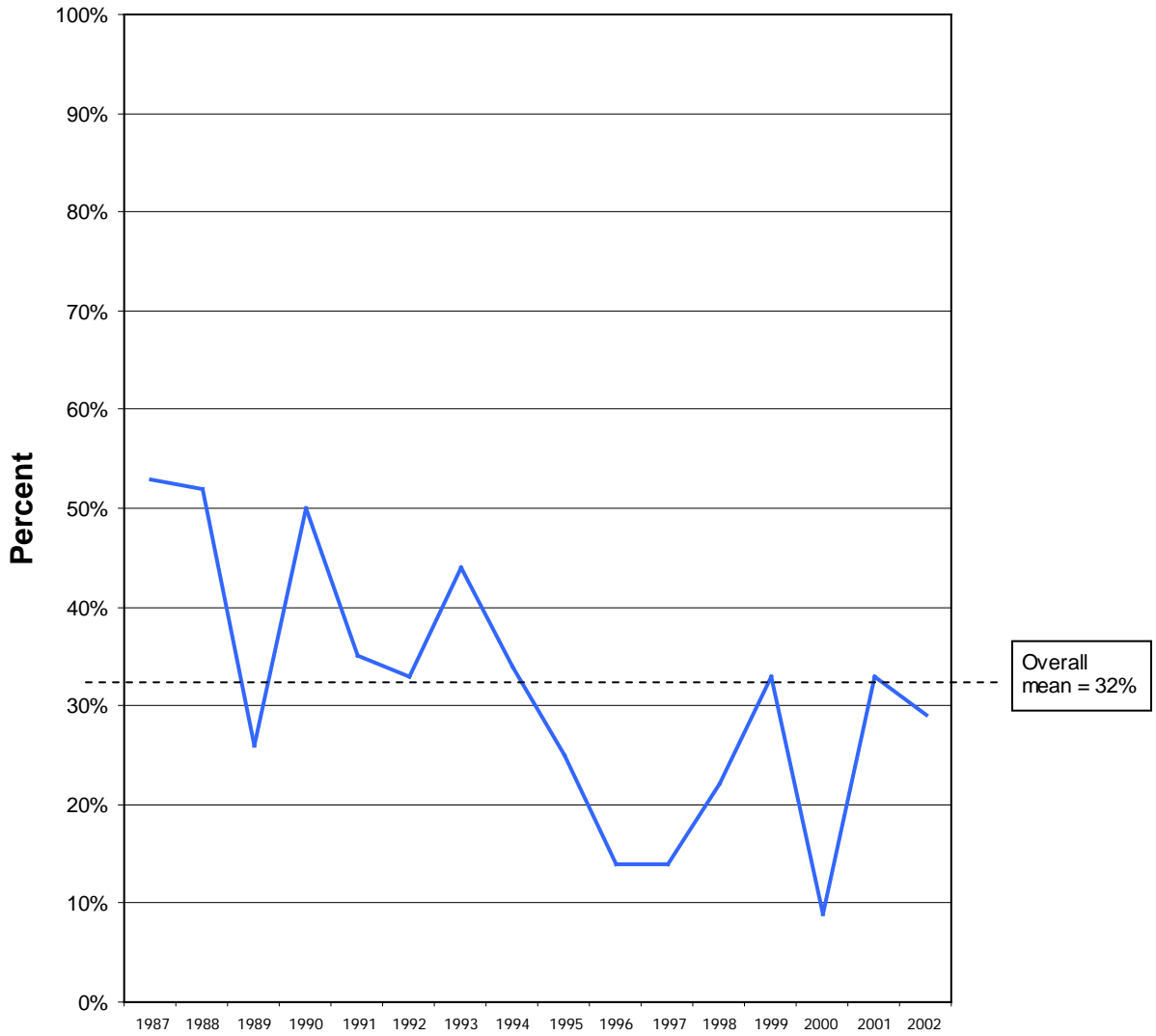


Exhibit 6  
NIA Summer Institute on Aging Research 1989-2002

**Percent of Participants with Physician Scientist Degrees**



**Physician scientist degrees:** M.D., M.D./Ph.D., D.O.  
**Non-physician scientist degrees:** Ph.D., D.V.M., D.D.S.,  
Pharm.D., Sc.D., D.N.Sc., Dr.P.H., D.S.W., Ed.D., J.D.

1987-1996 mean = 39%  
1997-2002 mean = 22%

## Exhibit 7

## Evaluation of the NIA Summer Institute on Aging Research

**VARIABLES IN THE CONCEPTUAL FRAMEWORK****NIA RESOURCES**

- *NIA funding*

Operational definition: The annual NIA budget for the Summer Institute on Aging Research (adjusted to 2003 dollars using the Biomedical Research and Development Price Index), which covers direct expenses for participants and faculty (e.g., transportation, lodging, meals, workshop materials, honoraria).

Primary data sources: Official NIA budget figures; discussions with NIA staff.

- *NIA staff support*

Operational definition: The number of NIA full-time-equivalent staff (FTEs) responsible for planning and overseeing the Summer Institute.

Primary data sources: NIA program documents; discussions with NIA staff.

**CHARACTERISTICS OF INDIVIDUAL PARTICIPANTS**

- *Demographic characteristics*

Operational definition: Sex (male or female) of each Summer Institute participant and approximate age of each participant at the time he/she attended the Institute.

Data source: Applications and CVs submitted by Institute participants; NIA program documents; discussions with NIA staff.

- *Type of doctoral degree*

Operational definition: Whether the participant had a physician scientist degree (M.D., M.D./Ph.D., D.O.) at the time he/she attended the Summer Institute or a non-physician scientist degree (e.g., Ph.D., Sc.D., D.N.Sc., Dr.P.H., D.V.M., D.D.S., Pharm.D., D.S.W., Ed.D., J.D.).

Primary data sources: List of participants compiled for each Summer Institute; applications and CVs submitted by Institute participants.

- ***Previous research experience as a trainee on an institutional NRSA training grant.***

Operational definition: Whether or not the participant served as a predoctoral and/or postdoctoral trainee on an Institutional National Research Service Award (NRSA), specifically a T32 or T35 grant.

Primary data sources: IMPAC II system; applications and CVs submitted by Institute participants.

- ***Interest in research involving minority aging and health disparities.***

Operational definition: Whether or not the participant's research interests included increasing understanding of the health and aging of minority Americans and improving their health status and quality of life.

Primary data sources: Research abstracts, applications, and CVs submitted by Institute participants.

### **SHORT-TERM GOALS FOR PARTICIPANTS**

- ***Presenting research findings at conferences on aging.***

Operational definition: Percent of Summer Institute participants who gave research presentations or served as lead authors of abstracts or poster presentations at national or international conferences on aging research within two years, five years, and eight years after attending the Institute.

Primary data sources: Conference proceedings of the Gerontological Society of America (GSA) and American Geriatrics Society (AGS); PubMed publications database; web searches; participant CVs.

- ***Publishing in peer-reviewed journals.***

Operational definition: Percent of Summer Institute participants who published research findings in peer-reviewed scientific journals within two years, five years, and eight years after attending the Institute.

Primary data sources: PubMed publications database; web searches; participant CVs.

- ***Applying for an NIH grant.***

Operational definition: Percent of Summer Institute participants who submitted an application to NIH for a research project grant (RPG), career development grant, Small Business Innovation Research or Technology Transfer (SBIR/STTR) award, or any other type of grant within two years, five years, and eight years after attending the Institute.

Primary data sources: CGAF; IMPAC II.

## **INTERMEDIATE GOALS FOR PARTICIPANTS**

- ***Securing a tenure-track position (or equivalent) that supports the conduct of aging research.***

Operational definition: Percent of Summer Institute participants who were successful in securing a tenure-track academic or clinical position (at the Associate Professor level or higher) or another type of permanent position that supports the conduct of aging research (e.g., administrator, research scientist) within two years, five years, and eight years after attending the Institute.

Primary data sources: CRISP; CGAF; IMPAC II; web searches; participant CVs.

- ***Receiving an NIH grant (any type), NIH minority supplement, or non-NIH grant.***

Operational definition: Percent of Summer Institute participants who served as principal investigator (PI) of a competing or noncompeting NIH grant of any type (e.g., RPG, career development grant, SBIR/STTR award), received an NIH minority supplement, or received a research grant from another federal agency, foundation, or other organization within two years, five years, and eight years after attending the Institute.

Primary data sources: CRISP; CGAF; IMPAC II; NSF Master Database of Proposals and Awards; web searches; participant CVs.

- ***Applying for a competitive NIH RPG grant.***

Operational definition: Percent of Summer Institute participants who submitted an application to NIH for a new or competing continuation research project grant (RPG) within two years, five years, and eight years after attending the Institute. An RPG is defined as a grant having activity code R01, R03, R15, R21, R22, R29, R33, R35, R37, RC1, P01, P42, U19, or UC1 (for NIGMS, P41 and U01), excluding NLM (all years), FIC (prior to FY 1994), and NCRR (for FY 1984-1989).

Primary data sources: CGAF; IMPAC II.

## **LONG-TERM GOALS FOR PARTICIPANTS**

- ***Receiving one or more competitive NIH RPG grants.***

Operational definition: Percent of Summer Institute participants who were successful in being awarded a new or competing continuation NIH research project grant (RPG) within two years, five years, and eight years after attending the Institute.

Primary data sources: CGAF; CRISP; IMPAC II.



- ***Being recognized for expertise in aging research.***

Operational definition: Percent of Summer Institute participants who received awards for their scientific contributions in aging research, served on editorial boards of scientific journals, served on external advisory groups (including NIH study sections, IC Councils), or held leadership positions in professional organizations promoting aging research within two years, five years, and eight years after attending the Institute.

Primary data sources: IMPAC II; web searches; participant CVs.

- ***Serving as a mentor for new researchers on aging.***

Operational definition: Percent of Summer Institute participants who served as a mentor on an NIH career development award, as the PI of an institutional training grant, as a dissertation chair, or in another mentorship role that provided training for new researchers in the conduct of aging research within two years, five years, and eight years after attending the Institute.

Primary data sources: CRISP; IMPAC II; web searches; participant CVs.

Exhibit 8

Evaluation of the NIA Summer Institute on Aging Research

**PROPOSED TIMELINE**

	Major Contractor Tasks	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
1	Meet with NIA and project advisory committee	[Task spans all 12 months]											
2	Revise evaluation design if needed	[Task in Month 1]											
3	Enter basic participant data in evaluation database	[Task in Months 1-2]											
4	Finalize strategy for TFF and CGAF analyses	[Task in Months 1-2]											
5	Perform TFF analysis		[Task in Months 2-3]										
6	Select "matching" trainees for comparison group			[Task in Months 3-4]									
7	Perform CGAF analysis				[Task in Month 4]								
8	Perform IMPAC II and CRISP queries				[Task in Months 4-5]								
9	Perform NSF grant database analysis				[Task in Months 4-5]								
10	Code participant applications, CVs, research abstracts				[Task in Months 4-8]								
11	Code data from GSA proceedings, directories				[Task in Months 4-5]								
12	Perform web searches					[Task in Months 5-8]							
13	Conduct PubMed analysis as needed						[Task in Months 6-8]						
14	Perform cost analysis for Study Question 1						[Task in Months 6-7]						
15	Conduct statistical analyses for Study Questions 2-5							[Task in Months 7-9]					
16	Summarize findings for each study question								[Task in Months 8-10]				
17	Prepare draft report									[Task in Months 9-11]			
18	Prepare final report												[Task in Month 12]

## Exhibit 9

## Evaluation of the NIH Summer Institute on Aging Research

**ESTIMATED COSTS**

<b>LABOR COSTS</b>			<b>TOTALS</b>	
	Hours	Rate	Amount	
Project Director	570	\$100.00	\$57,000	
Programmer/Analyst	200	75.00	15,000	
Research Analyst	560	35.00	19,600	
<b>TOTAL LABOR</b>	<b>1,330</b>		<b>\$91,600</b>	<b>\$91,600</b>
 <b>OTHER DIRECT COSTS</b>				
Outside Services (web search services, search firms)			\$1,200	
Travel and Related Expenses			600	
Computer Software and Supplies			600	
Printing/Photocopying			100	
Telephone/Fax			200	
Postage/Delivery/Messenger			50	
Misc. Supplies and Services			350	
<b>TOTAL OTHER DIRECT COSTS</b>				<b>\$ 3,100</b>
				<hr/>
		<b>TOTAL COST</b>		<b>\$94,700</b>

**ANTICIPATED FUNDING SOURCES**

<b>Fiscal Year</b>	<b>Estimated Cost</b>	<b>Estimated Amount from Each Funding Source</b>		
		<b>One Percent Evaluation Set-Aside Funds</b>	<b>IC Funds</b>	<b>Other Funds</b>
FY 2003	\$23,700	\$23,700		
FY 2004	\$71,000	\$71,000		
<b>PROJECT TOTAL</b>	<b>\$94,700</b>	<b>\$94,700</b>		