EVALUATION OF THE

RESOURCE CENTERS FOR MINORITY
AGING RESEARCH (RCMAR) PROGRAM

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by

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EXECUTIVE SUMMARY

The National Institute on Aging (NIA) has provided funding for the Resource Centers for Minority Aging Research (RCMAR) program since 1997, when the first six RCMARs were selected. The program is a key component of a larger effort at the National Institute on Aging to address minority aging health and reduce health disparities through research, information dissemination and education, including career development for underrepresented minority scholars. A review of the RCMAR program was undertaken with the following objectives:

1. Review the overall program and its impact;
2. Advise NIA on additional information that the RCMAR centers should be reporting;
3. Suggest mid-course corrections that could improve the RCMAR program; and
4. Provide advice regarding the long-term direction and value of the RCMAR program.

Mission of the RCMAR Initiative

The goals of the RCMAR program are to increase diversity in the professional workforce focused on minority aging and to improve the health and well-being of older minority populations. These goals are addressed by promoting research relevant to minority aging, recruiting and mentoring a diverse group of junior investigators known as RCMAR scholars, developing and disseminating measurement tools tailored for older minority populations, and working with community groups and other organizations to encourage minority elders to participate in research.

Carlyn Consulting Evaluation

The review was informed by an evaluation conducted by Carlyn Consulting (presented in Section II). The study addressed several key questions, including describing the baseline characteristics of RCMAR centers and scholars and collaborative core activities. The study also examined the extent to which the centers met their goals of selecting and mentoring RCMAR scholars, forming collaborative partnerships with the community and other research centers, creating and evaluating measurement tools and recruitment strategies for conducting minority aging research, increasing the number of investigators conducting such research, and disseminating research findings.

Baseline characteristics of RCMAR centers. As would be expected, RCMAR institutions had substantial experience with health disparity research prior to funding of the RCMAR, with an average of 24 principal investigators with funding for such research.

Baseline characteristics of RCMAR scholars. 97% of scholars were members of racial/ethnic minority groups and nearly all had a doctoral degree when entering the program. Two-thirds of the scholars held full-time academic positions and 58% were in tenured or tenure-track positions.

Collaborative activities. A wide range of collaborations was found among the RCMARs as well as with outside organizations. Collectively, the RCMAR Measurement and Methods Cores have produced several major publications and conferences, including: a special volume of the *Journal of Mental Health and Aging* (2001) and a special issue of *Medical Care* (2006).

Achievement of program goals. RCMARs funded 197 pilot projects during the study period, the number of investigators with external funding increased by 74%, and the number of awards increased by 73% during a period when the NIH increase in grants was 46%.

Achievement of goals by scholars. 74% of the scholars published at least one article in a peer-reviewed journal after joining RCMAR and 57% were first authors. While only 20% of RCMAR scholars had applied for a PHS grant before joining RCMAR, 46% applied for one or more PHS grants after joining the program. Similarly, while only 13% had received a PHS grant prior to RCMAR, 27% received one or more PHS grants after joining the program. Including non-PHS grants, 35% of scholars received some type of research grant as of July 2006. At the time of the evaluation, three-fourths of scholars were in full-time academic positions, with an additional 14% in adjunct faculty or medical positions. About one-fourth of the scholars had not yet published or applied for a research grant, in some cases because of the short time they had been with the program.

Advisory Panel Findings and Recommendations

Program Strengths

1. Serving as a model for other programs. The RCMAR model has been used by other NIH institutes and outside entities, especially the program's strategies for recruiting, mentoring and providing career guidance.

2. Increased productivity of centers and scholars. There is good evidence that the RCMAR program has increased research productivity as well as the overall number of researchers from underrepresented groups and the number of grants focused on minority aging research. The program has deployed successful strategies to engage in community collaborations and identify promising scholars.

3. Improved measurement tools and methods. The work of the RCMARs in cataloging, testing and refining measurement instruments to be used in minority aging research is noted by the review panel as impressive.

4. Improved recruitment and retention of research participants. The concerted RCMAR effort to create new knowledge about recruitment and retention of minority research participants and to move the field beyond what has historically been anecdotal evidence is noteworthy.

5. Increased visibility of minority aging research. The RCMARs increased the visibility of minority aging research workshops, collaborative publications, websites, individual publications, and national and local outreach and networking, which has increased the visibility of minority aging research.

6. Successful networking among centers. The RCMARs shared strategies for recruitment, mentoring, pilot grants, and community outreach; they coordinated several workshops on measurements and methods, and the resulting publications were well received and widely used.

7. Demonstrated programmatic flexibility. The RCMARs demonstrated flexibility in adjusting their approaches to better meet program goals, as evident in the various strategies used for community outreach, for recruiting and mentoring scholars, and in the case of some RCMARs, in managing scholars across substantial distances.

Potential Weaknesses and Concerns

1. Confusion regarding the RCMARs' role as 'resource centers.' The name, Resource Centers for Minority Aging Research, has led to some confusion regarding the roles to be served by such centers as providers of resources or services to other NIA centers or researchers. RCMARs should be viewed as 'resource centers' in the sense that they create scientific knowledge and research tools for the field of minority aging and health diversity research, rather than providing direct services to individuals and other NIA centers.

2. Variation in performance among RCMARs. Performance among RCMARs is not uniform, indicating that there is opportunity for improvement in individual centers and perhaps improved strategy sharing among centers.

3. Insufficient information on the selection of scholars. It would be useful to know more about outreach to potential scholars and the negotiation of the scholar's agreement to participate in the program. This information would be useful in sharing successful strategies among RCMARs, and more generally for other types of training programs.

4. Insufficient documentation on mentoring. Although some RCMARs had a range and depth of mentoring strategies, it is of concern that a substantial proportion of scholars did not have an easily identified mentor. It is possible that part of this difficulty can be attributed to differences in reporting among centers, nonetheless, clear identification of one or more appropriate mentors for each scholar is a key factor in their potential success.

5. Career paths of RCMAR scholars. Although most RCMAR scholars were reported to be in relevant research/academic career paths, 11% were in clinical or other positions not likely to involve minority aging research. The review panel recommends continued tracking of former RCMAR scholars to determine the longer term impact of the program on career paths and productivity.

6. Scholars' productivity and research funding. Although the trends for peer-reviewed publications and successful research funding are in the right direction, there is room for improvement. It should be expected that RCMAR scholars will increase their productivity over time, and will, on average, publish several relevant peer-reviewed articles each year and have greater grant success despite today's difficult funding environment.

Short-Term Recommendations

1. Identify and report on 'benchmarks'. Although the Coordinating Center has made progress in developing a database of information collected from each RCMAR, the review panel recommends that the database and reporting be expanded to include summary statistics to be used as benchmarks to track RCMAR progress. These benchmarks could be used to more effectively identify problems and make mid-course corrections. Data could address: (1) developing infrastructure to facilitate minority research throughout the institution; (2) creating a critical concentration of minority scholars; (3) elevating the status of minority research at the institution; and (4) enabling minority faculty recruitment. Availability of these data should enhance the Coordinating Center's ability to carry out and report more compelling analyses demonstrating the impact of the RCMAR program.

2. Report additional data. The review panel recommends, if possible, that the following additional information be reported by RCMARs on a regular basis:

- Name, title, role and expertise of each scholar's mentor(s).
- Information regarding the applicant pool for RCMAR scholars.
- Information from former scholars regarding current position, publications, and grants.

Long-Term Recommendations

1. Continue to identify comparative data against which to measure longer term success. The review panel suggests consideration of other relevant comparisons, such as initiatives supported by the Kellogg Foundation, the Robert Wood Johnson Foundation, and other external funders as well as NIH's EXPORT program.

2. Expand RCMARs to be broader and more multidisciplinary. The review panel discussed several issues regarding whether or how the RCMAR program should be altered to be more effective. One consideration was whether it should encourage a tighter focus on an area of research or encourage a broader, more multidisciplinary approach to minority aging research. The review panel noted that, although the RCMAR initiative is housed in the Behavioral and Social Research (BSR) program, a range of research initiatives and scholars from a range of disciplines have been supported. The review panel recommends that NIA continue this philosophy and, in fact, encourage increased multidisciplinary research.

3. Examine the context of RCMARs with respect to other NIH and external programs. There is a question as to how the various activities that are the focus of the RCMARs fit with other NIH initiatives. Are appropriate synergies being achieved between the RCMARs and other programs both within and beyond NIH? For example, are thematic partnerships with other institutes, such as NCI or NINDS, being sought? NIA staff are encouraged to continue to explore such opportunities.

4. Continue to focus on minority aging research. The review panel considered whether the RCMAR program should be expanded beyond minority aging research, perhaps to include the participation of a range of NIH institutes and centers. While the panel saw benefit in NIA's participation in other health disparities initiatives, the recommendation is to continue the program's focus on minority aging research. There is a concern that a broader focus on health disparities would dilute the benefits of a cadre of researchers with special skills, tools and experience in conducting research relevant to older populations.

5. Maintain a center structure for the RCMAR program. Consideration was given to whether the current structure of the program is the most appropriate. The review panel discussed using these resources to fund individual scholars, rather than through a center grant mechanism. The panel concluded that there are benefits to be gained from a center model, including a critical mass of faculty and other shared resources, networking among scholars at a single institution, continuity in community collaborations and partnerships, and visibility of the program at the home institution and more broadly.

Other Issues Considered by the Review Panel

Should the RCMAR funding guidelines for subsequent rounds require expansion or reduction of core activities? The review panel noted that the RCMARs have demonstrated various levels of strength with respect to the required core functions. The panel's opinion is that the core functions of the centers provide important infrastructure that should be continued, but that NIA not delineate what the focus of

each would be. Individual applicants should be encouraged to focus on their particular area(s) of strength in the center cores.

Should the RCMAR program be expanded to include additional sites even though funding for the program overall is anticipated to be level? The review panel is cognizant of the tight budget circumstances facing NIA and NIH more generally. The panel viewed the trend to fund more with less as destructive in the long run; it is likely to result in RCMAR mentors becoming over-committed and not able to devote the time and attention to the RCMAR scholars that is desired and needed for success.

ADVISORY PANEL REVIEW

Introduction

The National Institute on Aging (NIA) has provided funding for Resource Centers for Minority Aging Research (RCMARs) since 1997, when the first six RCMARs were selected. In FY 1997, six centers received five-year RCMAR awards; four of these grants were renewed in FY 2002 for another five years. Also in FY 2002, two new centers received their first RCMAR grant. The RCMAR program is a key component of a larger effort at the National Institute on Aging to address minority aging health and to reduce health disparities through research, information dissemination and education, including career development for under-represented minority scholars.

A review of the RCMAR program was undertaken with the following objectives: (1) to review the overall program and its impact; (2) to advise NIA on additional data or information that the RCMAR centers should be reporting; (3) to suggest mid-course corrections that could improve the RCMAR program; and (4) to provide advice regarding the long-term direction and value of the RCMAR program. To address these goals, the review panel focused on several questions:

- What has been the impact of RCMAR funding?

- What measurable outcomes can be attributed to the program?

- Should the program be modified, and if so, in what ways?

- Should the program be expanded to additional sites?

- Should the RCMARs be encouraged to become broadly focused with funding from several NIH institutes?

The review was conducted by a panel of experienced gerontologists: Alan Jette (Professor and Director, Health & Disability Research Institute, Boston University School of Public Health); Richard Schulz (Professor and Director of Gerontology, University of Pittsburgh); and Terrie Fox Wetle (Professor and Associate Dean of Medicine for Public Health, Brown University). The review was informed by an evaluation conducted by Carlyn Consulting; the evaluation can be found in Section II. The evaluators examined data from the RCMARs funded in Rounds I (1997) and II (2002), as well as information from NIH databases, PubMed, the RCMAR Scholar Database, and other sources. The review panel also consulted with Janet Frank (RCMAR Coordinating Center, UCLA) and with Sidney Stahl, NIA.

The purpose of the evaluation and the review was not to evaluate the performance of individual centers, but rather to provide advice regarding the overall RCMAR initiative by examining aggregated outcome data over the first two rounds of awards.

Mission of the RCMAR Initiative

The RCMAR program was launched in 1997 with two overarching goals:

- To increase diversity in the professional workforce focused on minority aging; and

- To improve the health and well-being of older minority populations.

RCMARs address these goals by promoting research that is relevant to minority aging, by recruiting and mentoring a diverse group of junior investigators known as RCMAR scholars, by developing and disseminating measurement tools tailored for older minority populations, and by working with community groups and other organizations to encourage minority elders to participate in research. Each RCMAR has built upon the strengths and resources of its institutional home to address these goals and tasks.

In addition to providing grant support for the RCMAR institutions, NIA also funded a RCMAR Coordinating Center (CC). The mission of the RCMAR Coordinating Center is to provide a vehicle for communication among RCMARs, as well as with other NIA centers, NIA staff, and with broader audiences. The CC provides visibility for the RCMARs and extends access to RCMAR tools and resources to other researchers; it also enhances communications with the media regarding RCMAR achievements and products. In addition, the Coordinating Center tracks information on a variety of RCMAR activities and outcomes through a survey of centers, data from annual reports, and a website used to provide reports on a six-month basis regarding scholars and open positions, grants, publications and academic recruitments. The Coordinating Center works with the Minority Aging Task Force and responds to information requests from NIA and other entities.

Evaluation Study Design and Summary Findings

The final report of the evaluation conducted by Carlyn Consulting is included in Section II and provides detail regarding the study design, questions addressed, data collected and findings. The report also discusses the limitations of the evaluation. A brief summary of the evaluation study is provided below.

The evaluation addressed the following study questions:

1. What are the baseline characteristics of RCMAR centers?
2. What are the baseline characteristics of RCMAR scholars?
3. What types of collaborative core activities have been conducted by RCMARs?
4. To what extent have the RCMARs achieved the following goals?

   - Selecting and mentoring a diverse group of RCMAR scholars.

   - Funding and overseeing at least 3 pilot projects per year.

   - Forming collaborative partnerships with community organizations and other research centers.

   - Developing and implementing strategies to recruit and retain minority populations in studies involving minority aging research.

   - Creating and evaluating measurement tools to increase their effectiveness with diverse older populations.

   - Disseminating research information and new findings to various scientific and non-scientific audiences.

   - Increasing the number of investigators and PHS grants focusing on minority aging research.

5. To what extent have the RCMAR scholars achieved the following goals?

    ▪ Publishing research in peer-reviewed scientific journals

    ▪ Competing successfully for a research grant or grants

    ▪ Pursing a career involving aging research and/or research aimed at reducing health disparities.

The evaluation used information from a variety of sources, primarily secondary data, including a review of RCMAR program documents, queries to NIH data bases (CRISP and IMPAC II), PubMed for publications, the RCMAR Scholar Database, and various websites and published documents. The two primary targets for data collection were the eight RCMAR centers funded during the period of FY 1997-2005 and the group of junior investigators selected as RCMAR scholars during this period (n=183).

A brief summary of the evaluation study findings is presented below, organized by the study questions.

Study Question 1. What were the baseline characteristics of the RCMAR centers?

All of the RCMARs structured their centers as partnerships that included more than one institution, school, division, institute, and/or other academic or clinical component involved with minority aging research (See Section II, Exhibit 1). At three centers, formal partnerships were established with academic institutions serving large numbers of minority students. Seven of the RCMAR institutions also had at least one other PHS-funded research center that was pursuing health disparity issues. Such collaborations with other centers and organizations are strongly encouraged by NIA, and included Demography Centers, the OAIC Pepper Centers, and the Alzheimer's Disease Research Centers.

It was also noted that the lead RCMAR institutions have had previous experience in minority aging research, which is not surprising given the application review criteria. In the baseline period (FY 1996-1997), RCMAR institutions averaged 24 principal investigators with funding for minority aging relevant research topics (range = 7 to 47 PIs), with an average of 28 grants per institution (range = 7 to 52 grants).

All of the RCMAR institutions had pre-existing relationships with community-based organizations in minority communities prior to RCMAR. However, many of these alliances involved health promotion activities that did not directly involve research. Only half of the RCMARs appeared to have extensive experience recruiting minority participants for research involving human subjects.

Study Question 2. What were the baseline characteristics of the RCMAR scholars?

An effort was made to describe the scholars at the time they joined RCMAR. A total of 183 junior investigators joined the program during FY 1997-2005 as RCMAR scholars (108 scholars in Phase I and 75 scholars in Phase II). Details are provided in Section II, Exhibit 4).

Race/ethnicity and gender. 97 % of RCMAR scholars who joined the program during FY 1997-2005 were members of a racial/ethnic minority group (Exhibit 5); 49% were African American, 21% were Hispanic, 16% Asian, 10% American Indian or Alaska Native (AI/AN), and 1% Pacific Islander; only 3% were Caucasian. There were five scholars whose race/ethnicity could not be identified from RCMAR program documents or other sources. 69% of the scholars were female and 31% were male (Exhibit 6). There were two scholars whose gender could not be identified.

Type of doctoral degree. As expected, nearly all of the RCMAR scholars (95%) had a doctoral degree at the time they joined the program (Exhibit 7). Over 50% had PhD degrees, 30% had MD degrees, 5% had both MD/PhD degrees, and 8% had another type of doctorate (e.g., PharmD, DSc). In addition, the evaluation found that 20% of the scholars had an MPH degree and 7% had an RN degree. For one scholar a degree could not be identified.

Academic position. 66% of the scholars held full-time academic positions at the time they joined RCMAR (Exhibit 8); specifically, 58% of the scholars were in tenure-track or tenured positions (50% were assistant professors, 5% associate professors, 3% full professors) and 8% were in research positions. Another 5% held medical positions (such as staff physician), 4% were instructors or adjunct faculty members, and 2% were in non-faculty positions. In addition, 17% of the scholars were non-clinical postdoctoral fellows when they joined RCMAR and 6% were graduate students. There were five scholars whose initial academic position could not be identified.

Previous scientific publications. 60% of the scholars had published at least one article in a peer-reviewed journal before joining RCMAR and 48% had been first authors (Exhibit 9). In addition, 18% had published more than 5 articles and 6% had more than 5 first-authored articles. Because it usually takes several months for a journal to accept a manuscript, papers published during the scholar's first RCMAR year were counted as previous publications.

Previous research grants. A small proportion of the RCMAR scholars (20%) had applied for at least one PHS grant before joining RCMAR, and fewer (13%) had been successful in receiving a PHS grant (Exhibit 10). Nearly all of the grants were designed for individuals embarking on a research career (e.g., F31 and F32 fellowships, K career development awards, or small research grants such as R03s, subprojects of program project grants); only 2% of the scholars had received an R01 (Exhibit 11).

Previous experience in minority and/or aging research. Based on an analysis of the scholars' previous scientific publications, PHS grant applications, and PHS grant awards, it was estimated that 52% of the RCMAR scholars had at least some experience in minority research, aging research, or both (Exhibit 12).

Pilot Project Research. The purpose of pilot studies is to collect preliminary data or analyze secondary data relevant to minority aging research, with funding not to exceed $20,000 (direct costs). Among these projects, 55% focused on individual behavioral processes, 19% involved population and social processes (e.g., epidemiology, demography, economics), another 19% involved clinical research, and 7% involved basic research (Exhibit 13). A high percentage of the scholars' projects (74%) were behavioral and social research studies.

Study Question 3. What types of collaborative core activities have been conducted by the RCMAR centers?

The evaluation documented a wide range of collaborations among the RCMARs and with outside organizations. These included attendance at annual investigator meetings as well as other meetings focused on specific topics. In addition to these administrative meetings, several workshops were conducted focused on career development for investigators, including several well attended pre-conference workshops and a cross-site research initiative. Several collaborations and resources to enhance community liaison and recruitment included publications, workshops, and an ongoing annotated bibliography.

The RCMARs were particularly active in addressing measurement and methods issues. Collectively, the RCMAR Measurement and Methods Cores have produced several major publications and conferences,

including two symposia on minority measurement issues presented at the 53rd Annual Scientific Meeting of the Gerontological Society of America (2000), several pre-conference workshops, a special volume of the *Journal of Mental Health and Aging* (Spring 2001), and a special issue of *Medical Care* (November 2006).

Study Question 4. To what extent have the RCMAR centers achieved the program's goals?

Scholar recruitment and mentoring. A primary program goal was the selection and mentoring of a diverse group of RCMAR scholars. The goal of diversity was achieved with 80% being members of underrepresented racial and ethnic groups. Most RCMAR scholars were recruited from within their own research institutions or through close partnerships with minority serving institutions. The mentoring aspect of this goal was somewhat harder to evaluate, in part because of inconsistencies in documenting mentors. Mentoring was accomplished in a variety of ways including individual mentoring and by teams. In addition to direct mentoring, centers reported a variety of research training strategies for scholars, including a methods and measurement internship, seminars, summer workshops, teleconferences, and structured didactic curricula.

Pilot projects. Centers reported that 197 pilot projects were funded during the period that 183 junior investigators joined the program, with some projects involving two or more scholars. The number of pilots funded each year increased from an average of 1.6 - 5.0 projects per center during Phase I, to 3.3 - 4.5 projects per center in Phase II.

Collaborative partnerships. As described above, the centers engaged in a wide array of collaborative relationships with community organizations and research centers. The model for these relationships followed the principles of community-based participatory research. In addition to the customary activities such as participating in community events, making presentations and helping community organizations by information sharing and development, several centers developed innovative strategies. These included producing a cable television program and co-sponsoring a community health van.

Strategies to recruit and retain minority research participants. The RCMARs used a wide array of strategies to attract potential research participants and several centers developed centralized databases of potential participants. Because there is no program-wide mechanism for tracking participants, it is not possible to gauge the success of various strategies.

Measurement tools. The RCMARs were highly successful in cataloging, developing and testing a wide array of measurement tools addressing a variety of topics relevant to minority health. This work is documented in an annotated bibliography posted on the RCMAR website and on individual RCMAR websites, including message boards for discussion of instruments. A majority of RCMARs have publications focused on measurement issues, and the evaluator found that major contributions had been made in the area of expanding and improving measurement tools.

Dissemination and communication. RCMARs were active in communications with community partners, including providing feedback on research findings. Strategies included newsletters, websites with links to educational materials, community seminars and other events, videos for tribal cable television, and other media connections.

Increasing the number of funded investigators and grants addressing minority aging research. The evaluator compared grant activity for institutions between Phase I and II, and noted a 73% increase in the number of awards, during a period when the NIH increase in research grants was 46%. Similarly, the number of PIs pursing minority aging research increased by 74% on average during this same period.

The evaluator compared RCMAR performance with the six highest scoring institutions that did <u>not</u> receive RCMAR funding and noted that RCMARs did significantly better in terms of increases in the number of investigators and grants funded.

Study Question 5. To what extent have the RCMAR scholars achieved the program's goals?

The success of RCMAR scholars can be measured by publications, funded research, and subsequent careers in aging research.

Publishing research in peer-reviewed scientific journals. 74% of the scholars published at least one article in a peer-reviewed journal after joining RCMAR and 57% were first authors. This compares positively to the scholars' pre-RCMAR performance. The scholars who published after joining RCMAR achieved a median of 1.3 articles per year.

Competing successfully for a research grant. While only a small proportion of the RCMAR scholars (20%) had applied for a PHS grant before joining RCMAR, the evaluation found that 46% applied for one or more PHS grants after joining the program. Similarly, while only 13% had received a PHS grant prior to RCMAR, 27% received one or more PHS grants after joining the program. Expanding the analysis to include non-PHS grants, more than a third of the scholars (35%) were successful in receiving some type of research grant as of July 2006. Additional analyses revealed that the average length of time to receive a PHS grant (for the 27% of RCMAR scholars who received such an award) was 2.6 years, and the average length of time to receive an R01 (for the 5% of scholars who received such an award) was 3.2 years after joining the program.

Pursuing a career involving aging research and/or research aimed at reducing health disparities. As of July 2006, 74% of the RCMAR scholars were in full-time academic positions that would allow them to pursue research: 46% were assistant professors, 14% were associate professors, 5% were full professors, and 9% were in other research positions. Another 8% were in medical positions, 6% were instructors or adjunct faculty members, and 3% served in non-faculty positions that were less likely to involve research. In addition, 4% of these scholars were still in postdoctoral fellowship programs and 5% were still graduate students interested in pursuing research careers. Scholars were also beginning to move to other institutions as a part of broader workforce development beyond the RCMARs: 62% of the 183 scholars were still working in RCMAR institutions as of July 2006.

It should be noted that approximately one-fourth of the scholars (26%) had not published or applied for a research grant in either area as of July 2006, in some cases because they had not been in the program very long and in other cases because they were now in medical or other positions that did not involve research.

Conclusion

The evaluator concluded that the RCMARs had generally met the program goals of identifying and mentoring scholars, who were beginning to demonstrate success. Moreover, the program had contributed significantly to the methods and tools specifically, and to the relevant literature more generally.

ADVISORY PANEL RECOMMENDATIONS

Program Strengths

1. Serving as a model for other programs. The RCMAR model has been used by other NIH institutes and outside entities. It is viewed as an effective strategy for recruiting, mentoring and providing career guidance.

2. Increased productivity of centers and scholars. There is good evidence that the RCMAR program in general, and the successful centers more specifically, have increased research productivity, have increased the number of researchers from underrepresented groups, and have increased the number of grants focused on minority aging research.

From a process perspective, there is an impressive increase in activities relevant to minority aging health research, both by the RCMAR centers and RCMAR scholars. Substantial and apparently successful strategies were employed to engage in community collaborations, to develop partnerships, and to identify promising scholars. Finding the appropriate metric for measuring the outcomes of such collaborations is difficult, beyond the process and descriptive measures used in the evaluation. Although this work is time- and resource-intensive, it is necessary; effective community-based health disparities research is impossible without these investments.

There is also good evidence of a variety of positive outcomes, such as the 73% increase in minority aging grants received by RCMAR center faculty and scholars, compared to a 46% increase in NIH grants awarded during the same time period. It was noted by the evaluator that there was better outcome performance for the group of Phase I RCMARs than for those joining in Phase II, but this is potentially attributable to the period of exposure, meaning the time since a scholar joined the RCMAR during which publications and grant applications might be written.

3. Improved measurement tools and methods. The work of the RCMARs in cataloging, testing and refining measurement instruments to be used in minority aging research is noted by the review group as impressive. This success is in part due to the requirement that this be a core activity for centers and that these activities were encouraged. Moreover, the annotated description of the measures made available at the website and described in several peer-reviewed publications is an important and successful outcome of the RCMAR program. This successful approach resulted in new and refined measures available to the field and is a model for other program areas.

4. Improved recruitment and retention of research participants. Another focus of collaborative activities was on improving strategies for recruiting and retaining minority research participants. The RCMARs' concerted effort to create new knowledge about recruitment and retention and to move the field beyond what has historically been anecdotal evidence is noteworthy. Dissemination of these strategies occurred in well attended pre-conference workshops and through publications such as "The Science of Inclusion", edited by James Jackson and Leslie Curry and published by the Gerontological Society of America (2003).

5. Increased visibility of minority aging research. The RCMARs, through workshops, collaborative publications, websites, individual publications, and national and local outreach and networking have increased the visibility of minority aging research. This visibility begins at the local home institutions but

has national and international reach as well. This increased visibility can be documented by oversubscribed workshops at national venues, increased numbers of presentations at professional meetings, and focused publications aimed at a variety of audiences.

6. Successful networking among centers. Although there was noted productivity at each RCMAR, the impact of the RCMARs as a group is also important. Through networking and collaboration among RCMARs, several important achievements can be noted. RCMARs shared strategies for recruitment, mentoring, pilot grants, community outreach and other administrative activities. They coordinated several workshops on measurements and methods, and the resulting publications were well received and widely used.

7. Demonstrated programmatic flexibility. The review panel noted as a strength the flexibility of the RCMARs to adjust strategies and approaches to better meet program goals.   This was evident in the various strategies used for community outreach, for recruiting and mentoring scholars, and in the case of some RCMARs, in managing scholars across substantial distances.

Potential Weaknesses and Concerns

1. Confusion regarding RCMARs' role as 'resource centers.' The naming of RCMARs as Resource Centers for Minority Aging Research has led to some confusion regarding the roles to be served by such centers as providers of resources or services to other NIA centers or researchers. RCMARs should be viewed as 'resource centers' in the sense that they create scientific knowledge and research tools for the field of minority aging and health diversity research, rather than providing direct services to individuals and other NIA centers. Certainly, individual RCMAR researchers may choose to enter into mutually beneficial collaborations with external researchers but they should not be expected to provide services, such as subject recruitment, to external researchers as a part of the RCMARs' current responsibilities.

2. Variation in performance among RCMARs. It is noted that the performance among RCMARs is not uniform, indicating that there is opportunity for improvement in individual centers and perhaps improved strategy sharing among centers. For example, it was noted that 26% of scholars had not submitted a grant by the July, 2006 closing date of the evaluation. This may in part be due to their recently becoming a RCMAR scholar, but it may also indicate a need for improved mentoring and guidance of the scholars.

3. Insufficient information on the selection of scholars. The evaluation report does not provide information regarding the recruitment and selection of RCMAR scholars. For example, data are not available regarding recruitment strategies, size and descriptors of applicant pool, selection processes, and yield of accepted applicants. It would be useful to know more about outreach to potential scholars and the negotiation of the scholar's agreement to participate in the program. This information would not only be useful for sharing of successful strategies among RCMARs, but also more generally for other types of training programs.

4. Insufficient documentation on mentoring. Although some RCMARs had a range and depth of mentoring strategies, it is of concern that a substantial proportion of scholars did not have an easily identified mentor. It is possible that part of this difficulty can be attributed to differences in reporting among centers, however, clear identification of a mentor, including one or more specific mentors for the pilot studies, is recommended by the review panel. It is noted that it is difficult to identify appropriate metrics for measuring mentoring beyond the outcome measures of success for individual scholars. Nonetheless, clear identification of an appropriate mentor or mentors for each scholar is a key factor in their potential success.

5. *Career paths of RCMAR scholars.* Although a majority of RCMAR scholars were reported to be in relevant research/academic career paths, 11% were in clinical or other positions not likely to involve minority aging research. The review panel recommends continued tracking of former RCMAR scholars to determine the longer term impact of the program on career paths and productivity.

6. *Scholars' productivity and research funding.* Although the trends for peer-reviewed publications and successful research funding are in the right direction, there is room for improvement. It should be expected that RCMAR scholars will increase their productivity over time and will, on average, publish several relevant peer-reviewed articles each year. Similarly, the proportion of funded PIs among scholars should be expected to increase despite the difficult funding environment. There was mixed success among scholars regarding research funding. A surprising proportion had not yet applied for external funding. Another measure of program success would be the numbers of diversity supplements for RCMAR scholars.

Recommendations

The review panel had several recommendations, some are for the more immediate future and others are of a longer term nature.

A. Short-Term Recommendations

1. *Identify and report on 'benchmarks.'* The RCMAR Coordinating Center has made important progress in developing a database of regularly reported data from each RCMAR. The review panel recommends that the database and reporting be expanded to include a set of summary statistics that could be used as benchmarks to track RCMAR progress. It is our understanding that such summaries are available, but not shared among the RCMARs. These benchmarks could be used to more effectively identify problems and make mid-course corrections. For example, useful information might address the following: (1) developing infrastructure to facilitate minority research throughout the institution; (2) creating a critical concentration of minority scholars; (3) elevating the status of minority research at the institution; and (4) enabling minority faculty recruitment. The availability of these data should enhance the Coordinating Center's ability to carry out and report more compelling analyses demonstrating the impact of the RCMAR program.

2. *Report additional data*. The review panel recognizes that it may be difficult to change data reported by RCMARs but recommends, if possible, that the following additional information be reported by RCMARs on a regular basis:

- Name, title, role and expertise of each scholar's mentor(s).
- Information regarding the applicant pool for RCMAR scholars.
- Information from former scholars regarding current position, publications, and grants.

B. Long-Term Recommendations

1. *Continue to identify comparative data against which to measure longer term success.* The review panel observed that the comparison groups for the evaluation were imperfect, as noted by the evaluator. Comparisons of productivity pre-and post-RCMAR award may be confounded by expected increases in productivity associated with professional maturation and experience. Comparing RCMAR centers that were funded with those that applied but that did not score so well also provides a biased comparison. The review panel suggests considerations of other relevant comparisons such as initiatives supported by the Kellogg Foundation, the Robert Wood Johnson Foundation, and other external funders as well as NIH's

EXPORT program. Another option might be to expand the analyses comparing the performance of RCMAR scholars prior to enrolling in the program with rates of productivity during and after their RCMAR experience. This would require the collection and reporting of both historical and prospective performance data.

2. *Expand RCMARs to be broader and more multidisciplinary.* The review panel discussed several issues regarding whether or how the RCMAR program should be altered to be more effective. One consideration was whether the program should encourage a tighter focus on an area of research or encourage a broader, more multidisciplinary approach to minority aging research. The review panel noted that, although the RCMAR initiative is housed in the BSR program, a range of research initiatives and scholars from a range of disciplines had been supported. The review panel recommends that NIA continue this philosophy and in fact to encourage increased multidisciplinary research.

3. *Examine the context of RCMARs with respect to other NIH and external programs.* There is a question as to how the various activities that are the focus of the RCMARs fit with other NIH initiatives. Are appropriate synergies being achieved between the RCMARs and other programs both within and beyond NIH? For example, are thematic partnerships with other institutes, such as NCI or NINDS, being sought? NIA staff are encouraged to continue to explore such opportunities.

4. *Continue to focus on minority aging research.* The review panel considered whether the RCMAR program should be expanded beyond minority aging research, perhaps to include the participation of a range of NIH institutes and centers. While the panel saw benefit in NIA's participation in other health disparities initiatives, the recommendation is to continue the program's focus on minority aging research. There is a concern that a broader focus on health disparities would dilute the benefits of a cadre of researchers with special skills, tools and experience in conducting research relevant to older populations.

5. *Maintain a center structure for the RCMAR program.* Consideration was given to whether the current structure of the program is the most appropriate. Using these resources to fund individual scholars, rather than through a center grant mechanism was discussed. The review panel believes that there are benefits to be gained from a center model, including a critical mass of faculty and other shared resources, networking among scholars at a single institution, continuity in community collaborations, and partnerships and visibility of the program at the home institution and more broadly.

C. Other Issues Considered by the Review Panel

Should the RCMAR funding guidelines for subsequent rounds require expansion or reduction of core activities? The review panel noted that RCMARs had demonstrated various levels of strength among the required core functions. The panel's opinion is that the core functions of the centers provide important infrastructure that should be continued, but that NIA not delineate what the focus of each would be. Individual applicants should be encouraged to focus on their particular area(s) of strength in the center cores.

Should the RCMAR program be expanded to include additional sites even though funding for the program overall is anticipated to be level? The review panel is cognizant of the tight budget circumstances facing NIA and NIH more generally. The panel viewed the trend to fund more with less as destructive in the long run; it is likely to result in RCMAR mentors becoming over-committed and not able to devote the time and attention to the RCMAR scholars that is desired and needed for success.

Conclusion

The RCMAR initiative has demonstrated considerable success on several measures. The centers address an important area of biomedical research and have made contributions that have improved such research. There are opportunities for improved tracking of benchmarks and for understanding the program in the broader context of health disparities research. Some of the data for developing this understanding are described above; other efforts would require comparative analyses of advances in disparities research more generally, and the role played by RCMAR scholars and centers more specifically.

SECTION II:

EVALUATION OF THE RCMAR PROGRAM
BY CARLYN CONSULTING

INTRODUCTION TO THE STUDY

In 2006 the National Institute on Aging (NIA) sponsored an evaluation of the Resource Centers for Minority Aging Research (RCMAR) program, a major NIA initiative that also receives funding from the National Institute of Nursing Research (NINR) and the National Center on Minority Health and Health Disparities (NCMHD). An "Express Award" to NIA from the Evaluation Branch (OD/NIH) facilitated the study.

The RCMAR program, which was launched in FY 1997 by NIA's Behavioral and Social Research (BSR) Program, has two overarching goals: (1) to increase diversity in the professional workforce pursuing research on minority aging; and (2) to improve the health and well-being of older minority populations. RCMAR institutions are charged with promoting research relevant to minority aging, recruiting and mentoring a diverse group of junior investigators (known as RCMAR scholars), developing measurement tools tailored to older minority populations, and working with community groups and other organizations to encourage the participation of minority elders in research studies.

Since 1993 the National Institute on Aging has been at the forefront in creating several research center programs targeting minority health and health disparity issues, including the RCMAR program. Following NIA's early lead and in response to NIH's five-year *Strategic Research Plan to Reduce and Ultimately Eliminate Health Disparities* which was released in 2000, other NIH institutes and centers (ICs) and agencies in the Public Health Service (PHS) have developed similar programs to address health disparity issues and the underrepresentation of minority scholars in biomedical and behavioral research, many of which were modeled after RCMAR. A list of research center programs of this type that have been sponsored by NIA and by other ICs and PHS agencies is presented in Appendix A.

The present evaluation focused on the eight centers that received at least one five-year RCMAR award during the program's first eight years (FY 1997-2005) and the 183 RCMAR scholars who participated in the program during this period. In FY 1997, six centers received five-year RCMAR awards; four of these grants were renewed in FY 2002 for another five years. Also in FY 2002, two new centers received their first RCMAR grant. In each five-year period (referred to as RCMAR I and RCMAR II), one of the centers was awarded additional funding to serve as the Coordinating Center for the program. An overview of the eight RCMAR centers is presented in Exhibit 1A, which lists the center directors (principal investigators), the participating institutions and schools, and the primary minority communities from which their research participants have been recruited. A timeline summarizing the RCMAR awards is shown in Exhibit 1B. The five-year RCMAR awards have been funded using the P30 mechanism (center core grants). Total NIH support for RCMAR activities has increased over the years from $3,547,319 in FY 1997 to $4,332,018 in FY 2006. During this period, the average grant award (total cost per center, excluding Coordinating Center funding) has increased from $574,553 to $684,487 per year.

The evaluation was designed to document the baseline characteristics of the RCMAR centers and their scholars, the major activities conducted by the RCMARs, and the extent to which they achieved the program's goals. In addition to comparing the RCMAR institutions' performance before and after receiving a RCMAR grant, the performance of the initial institutions was compared to that of a control group of unsuccessful RCMAR applicants. Five broad study questions were addressed. Nearly all of the information needed to answer the study questions was available from secondary data sources, with additional information being provided by the center directors, NIA Program staff, and the RCMAR Coordinating Center.

Findings of the evaluation were very informative and positive, revealing an overall success story of centers achieving the goals and executing the purposes of the RCMAR program. There were especially positive results with respect to the type of research the scholars were pursuing after they joined the RCMAR program. Based on an analysis of the scholars' scientific publications, PHS grant applications and awards, and other grant awards after they joined RCMAR, it was found that the proportion of scholars engaged in minority aging research nearly tripled (rising from 20% to 56%) and the proportion engaged in minority *and/or* aging research increased from 52% to 74%. Of the funded pilot studies, almost three-quarters were classified as behavioral or social research. The study also found that about one-third of the 183 scholars had been awarded positions in non-RCMAR institutions as of July 2006, a finding that indicates progress in achieving one of the program's overarching goals: to increase diversity in the professional workforce pursuing research on minority aging.

An evaluation advisory panel consisting of three highly regarded experts in the field of aging research (shown in Appendix B) was convened in December 2007. The panel members reviewed the study's findings, assessed the early impact of RCMAR funding, and provided advice to NIA regarding mid-course corrections (e.g., additional information that the RCMARs should provide to the Coordinating Center) and the long-term direction and value of the RCMAR program. The panel's conclusions and recommendations are presented in Section I of this report.

STUDY DESIGN

The study was primarily an outcome evaluation aimed at determining the extent to which specific program goals were achieved by the group of centers and their scholars during RCMAR's first eight years. The study design also included elements of a process evaluation in its examination of the major activities conducted by the RCMARs during this period. The conceptual framework for the evaluation (shown in Exhibit 2) illustrates how the RCMAR program is intended to work. This type of visual diagram (sometimes called a logic model) shows how specific baseline characteristics and program activities are hypothesized to influence the subsequent achievement of program goals. The conceptual framework for the RCMAR evaluation identifies several baseline characteristics of the centers and scholars that could affect their subsequent success, four types of program activities that centers are expected to perform, and specific goals for the centers and scholars. The NIA contracted with Carlyn Consulting to design and conduct the evaluation. Marcia Carlyn, Ph.D. served as the project director.

Study Questions

The evaluation has been designed to answer the following study questions:

1. What were the baseline characteristics of the RCMAR centers?

2. What were the baseline characteristics of the RCMAR scholars?

3. What types of collaborative core activities have been conducted by the RCMAR centers?

4. To what extent have the RCMAR centers achieved the following goals?

    - Selecting a diverse group of RCMAR scholars and providing them with mentoring and research support.

    - Funding and overseeing at least 3 pilot projects per year.

    - Forming collaborative partnerships with community organizations and other research centers.

    - Developing and implementing strategies to recruit and retain minority populations in studies involving minority aging research.

    - Creating and evaluating measurement tools to increase their effectiveness with diverse older populations.

    - Disseminating research information and new findings to various scientific and non-scientific audiences.

    - Increasing the number of investigators and PHS grants focusing on minority aging research.

    Comparing the RCMAR I institutions (those that were initially funded in FY 1997) with a similar group of institutions (RCMAR grant applicants that were not funded), were the RCMAR institutions more successful than the non-RCMAR institutions in increasing the number of PHS-funded grants and investigators focusing on minority aging research during the 8-year period from FY 1996-1997 to FY 2004-2005?

5. To what extent have the RCMAR scholars achieved the following goals?

- Publishing research in peer-reviewed scientific journals

- Competing successfully for a research grant

- Pursing a career involving aging research and/or research aimed at reducing health disparities.

Comparing the baseline characteristics of the scholars who were more successful and less successful in achieving the three goals for scholars, can "scholars with strong potential" be identified from their baseline characteristics?

Data Collection and Analysis

To answer the study questions, information was collected on two target populations:

- The eight RCMAR centers funded during the period FY 1997-2005.

- The junior investigators who were selected as RCMAR scholars and received pilot project support during this period (n = 183), which included the first cohort of 108 scholars who joined RCMAR during FY 1997-2001 and a second cohort of 75 scholars who joined during FY 2002-2005.

Fortunately, nearly all of the information needed could be obtained from secondary data sources by collecting specific data on each of the variables shown in the conceptual framework. Identifying the RCMAR scholars and their experiences, however, turned out to be more challenging than anticipated because there was no pre-existing RCMAR scholar database and the structure of the reports prepared by the Coordinating Centers made it difficult to track the progress of individual centers and scholars. The following data collection strategies were employed:

- Analyzing the content of RCMAR program documents, including the two RCMAR RFAs, summary statements for the RCMAR centers' initial and competing continuation grant applications, the final report prepared by the first RCMAR Coordinating Center, the semi-annual aggregate reports prepared by the second Coordinating Center, major RCMAR publications and workshop summaries, and other program documents produced by the NIA, the two Coordinating Centers, and individual RCMAR centers.

- Performing queries of two large NIH databases (CRISP and IMPAC II) to obtain information on PHS grant applications and awards involving the RCMAR centers and scholars.

- Performing PubMed searches to obtain an unbiased count of the number of the scientific articles published by RCMAR scholars in peer-reviewed journals before and after they received RCMAR funding (with separate counts for first-authored and co-authored publications).

- Reviewing a variety of websites involving the RCMAR program, centers, and scholars.

- Developing a RCMAR Scholar Database that includes key information on each of the scholars who joined the program during FY 1997-2005.

- Holding discussions with the RCMAR Program Director and Coordinating Center personnel.

Descriptive statistics and standard statistical tests were used to answer the first five study questions. In many cases, the recent performance of the centers and scholars was compared with their baseline performance prior to their participation in RCMAR.

FINDINGS

Study Question 1. What were the baseline characteristics of the RCMAR centers?

Participating institutions and schools. All of the RCMARs structured their centers as partnerships that included more than one institution, school, division, institute, and/or other academic or clinical component involved with minority aging research, as shown in Exhibit 1A. At three centers (CHIME, CMA, and MCUAAAR), formal partnerships were established with academic institutions serving large numbers of minority students. Seven of the RCMAR institutions also had at least one other PHS-funded research center that was pursuing health disparity issues (e.g., EXCEED, EXPORT). In many cases, these centers were located near each other to encourage interaction and the sharing of resources. Given the breadth of minority aging research, collaborations with other centers and organizations are strongly encouraged by NIA, particularly for program project grants such as RCMAR. Collaborations included the Demography Centers, the OAIC Pepper Centers, and the Alzheimer's Disease Research Centers.

Lead institutions' previous experience in minority aging research. To estimate the institutions' experience in minority aging research prior to RCMAR, a methodology was developed to identify all competing and noncompeting PHS grants awarded to a particular institution during FY 1996-1997 (the baseline period) that involved minority aging research and to identify their respective principal investigators (PIs); the methodology is described in Appendix C. The results were very similar for the RCMAR I and RCMAR II institutions, as shown in Exhibit 3. The average number of different investigators with minority aging grants during FY 1996-1997 was relatively high for both cohorts, averaging 24 PIs per institution for the group as a whole. However, there was substantial variation among the institutions; two RCMARs had only 7 PIs and one had 47 PIs. With respect to grants, the analyses revealed that the average number of PHS-funded studies addressing minority aging research during FY 1996-1997 was quite high for both cohorts, averaging 28 grants per institution. As was found for the PIs, however, there was substantial variation among the institutions; one RCMAR had only 7 grants that involved minority aging research and one had 52 grants.

Previous collaborations with community-based organizations. All of the RCMAR institutions had existing relationships with minority communities prior to RCMAR. However, many of these alliances involved health promotion activities that did not directly involve research. Examples include collaborations with churches in African American communities, community clinics, health boards, the state's county extension service, and other organizations serving minority communities. Only half of the RCMARs appeared to have extensive experience recruiting minority participants for research involving human subjects.

Study Question 2. What were the baseline characteristics of the RCMAR scholars?

This study question was designed to provide a snapshot of the scholars at the time they joined RCMAR. A total of 183 junior investigators joined the program during FY 1997-2005 as RCMAR scholars. The six RCMAR I institutions selected 108 scholars during the program's first phase (FY 1997-2001) and the six RCMAR II institutions selected 75 scholars during the first few years of the second phase (FY 2002-2005). The number of new scholars varied from year to year, as shown in Exhibit 4.

Race/ethnicity and gender. The evaluation found that nearly all of the RCMAR scholars who joined the program during FY 1997-2005 (97%) were members of a racial/ethnic minority group, as shown in Exhibit 5. Approximately half (49%) were African American, 21% were Hispanic, 16% Asian, 10% American Indian or Alaska Native (AI/AN), and 1% Pacific Islander; only 3% were Caucasian. There were five scholars whose race/ethnicity could not be identified from RCMAR program documents or other sources. It was also found that 69% of the scholars were female and 31% were male (see Exhibit 6). There were only two scholars whose gender could not be identified.

Type of doctoral degree.   As expected, nearly all of the RCMAR scholars (95%) had a doctoral degree at the time they joined the program (see Exhibit 7). Over 50% had PhD degrees, 30% had MD degrees, 5% had both MD/PhD degrees, and 8% had another type of doctorate (e.g., PharmD, DSc). In addition, the study found that 20% of the scholars had an MPH degree and 7% had an RN degree. There was only one scholar whose degree could not be identified.

Academic position. The evaluation found that 66% of the scholars held full-time academic positions at the time they joined RCMAR that would permit them to pursue research (see Exhibit 8); specifically, 58% of the scholars were in tenure-track or tenured positions (50% were assistant professors , 5% associate professors, 3% full professors) and 8% were in research positions. Another 5% held medical positions (such as staff physician), 4% were instructors or adjunct faculty members, and 2% were in non-faculty positions. In addition, 17% of the scholars were non-clinical postdoctoral fellows when they joined RCMAR and 6% were graduate students. There were five scholars whose initial academic position could not be identified.

Previous scientific publications. The study found that 60% of the scholars had published at least one article in a peer-reviewed journal before joining RCMAR and 48% had been first authors (see Exhibit 9). In addition, 18% had published more than 5 articles and 6% had more than 5 first-authored articles. To obtain an objective count of each scholar's previous scientific publications (including those involving social/behavioral research), the National Library of Medicine's PubMed database was used as the primary data source; case reports, comments, editorials, and other types of articles not directly related to research studies were excluded. Because it usually takes several months for a journal to accept a manuscript, papers published during the scholar's first RCMAR year were counted as previous publications.

Previous research grants. The evaluation found that a small proportion of the RCMAR scholars (20%) had applied for at least one PHS grant before joining RCMAR, and fewer (13%) had been successful in receiving a PHS grant (see Exhibit 10). As expected, nearly all of the grants were designed for individuals embarking on a research career (e.g., F31 and F32 fellowships, K career development awards, or small research grants (e.g., R03s, subprojects of program project grants); only 2% of the scholars had received an R01. The percent of scholars with different types of PHS grants is shown in Exhibit 11 (because five scholars had received more than one type of grant, the percentages in this exhibit total more than 13%).

Previous experience in minority and/or aging research. The study found that approximately half of the RCMAR scholars (52%) had at least some experience in minority research, aging research, or both areas (see Exhibit 12). The results were based on an analysis of the scholars' previous scientific publications, PHS grant applications, and PHS grant awards.

Type of research to be pursued in RCMAR. All of the RCMAR institutions were required to support 3 to 4 pilot projects per year that involved one or more RCMAR scholars as lead investigators, and the scholars were to be mentored by senior researchers. The purpose of the pilot studies was to collect preliminary data or analyze secondary data relevant to minority aging research. Funding for each pilot

study could not exceed $20,000 (direct costs). Most of the studies were completed in one year although some required more time. An analysis of the individual pilot projects found that 55% of the projects focused on individual behavioral processes, 19% involved population and social processes (e.g., epidemiology, demography, economics), another 19% involved clinical research, and 7% involved basic research (see Exhibit 13). A high percentage of the scholars' projects (74%) were behavioral and social research studies, which is consistent with the goals of NIA's BSR Program. An additional analysis conducted by the NIA RCMAR Program Director found that it was quite likely that at least 50% of the studies involving individual behavioral processes and 70% of the studies involving population and social processes would be of interest to the two branches in the BSR Program if the scholars decided to submit NIH grant applications based on their pilot project findings.

Study Question 3. What types of collaborative core activities have been conducted by the RCMAR centers?

The activities of each RCMAR are organized around four required cores:

- Administrative Core
- Investigator Development Core
- Community Liaison Core
- Measurement and Methods Core.

In addition to coordinating the various activities conducted by their individual cores, the centers have worked together on a large number of collaborative projects to learn from each other and share their experiences with a broader audience. Most of the collective projects (summarized in this section) have been spearheaded by the leaders of the respective cores.

Administrative Core activities. The Administrative Core is responsible for coordinating all center activities, overseeing the selection of pilot projects, working with the center's advisory panel, encouraging internal and external collaborations, and submitting progress reports to the Coordinating Center for incorporation into the RCMAR Program Emphasis and Outcomes Report (a semi-annual aggregate report synthesizing the centers' research findings, methodological developments, and progress toward meeting program goals). Each center's Administrative Core is also responsible for working closely with the Coordinating Center to prepare for Annual Investigators Meetings at which the center directors, core leaders, and other RCMAR participants discuss collaborative projects, RCMAR scholars' research, science findings relevant to all of the centers, and other issues. Monthly conference calls have enabled the center directors to discuss a variety of topics relevant to the administration of the centers. The Administrative Cores as a group organized the following cross-site meetings:

- RCMAR Annual Investigators Meeting (Bethesda, February 11-13, 1999).

- RCMAR Annual Investigators Meeting (Bethesda, February 10-11, 2000).

- RCMAR Annual Investigators Meeting (Bethesda, February 26-28, 2001).

- RCMAR Annual Investigators Meeting – hosted by NERC (Denver, January 8-9, 2003).

- RCMAR Annual Investigators Meeting – hosted by CHAMP (Charleston, SC, March 11-12, 2004).

- RCMAR Annual Investigators Meeting – hosted by CALME (New York City, June 2-3, 2005).

- RCMAR Annual Investigators Meeting – hosted by CADC (San Francisco, April 3-4, 2006).

- "RCMAR Community Partnerships to Improve Diabetes Care and Outcomes of Minority Elders" – a symposia of the 59th Annual Scientific Meeting of the Gerontological Society of America (Dallas, November 16-20, 2006).

Investigator Development Core activities. Each RCMAR also has an Investigator Development Core responsible for recruiting RCMAR scholars and mentors, providing scholars with long-term mentoring, overseeing the progress of pilot projects, and disseminating research findings. Given the challenges of mentoring young investigators and the importance of encouraging minority faculty to pursue careers in minority aging research, the Investigator Development Cores collaborated with the Administrative Cores and the Coordinating Center to organize the following cross-site workshops and activities:

- "Minority Investigator Recruitment, Retention, and Career Development: What We Know and What We Need to Know" – a pre-conference workshop of the 54th Annual Scientific Meeting of the Gerontological Society of America (Chicago, November 13, 2001).

- "Maximizing the Potential of Minority Faculty through the Mentoring Process" – a pre-conference workshop of the 56th Annual Scientific Meeting of the Gerontological Society of America (San Diego, November 21, 2003).

- "Scientific and Professional Writing Skills Workshop for Junior Faculty in Minority Aging Research" – a pre-conference workshop of the 59th Annual Scientific Meeting of the Gerontological Society of America (Dallas, November 16, 2006).

- "Detecting Differential Item Functioning in Cognitive Measures for Spanish and English-Speaking Older Adults by Acculturation Orientation and Language of Test Administration" – the first competitive RCMAR award to foster cross-site research led by RCMAR scholars. The collaborative pilot project involved a team of scholars and mentors from all RCMAR II centers (awarded in January 2006).

- Conducting a web/mail survey of 126 RCMAR scholars to assess the mentoring and career advancement component of the program. The initial results (based on the responses of 57 scholars) have been analyzed and the survey is being extended to improve the response rate.

Community Liaison Core activities. Each RCMAR has a Community Liaison Core responsible for facilitating interaction among researchers, community leaders, and organizations interested in minority health and enhancing the recruitment and retention or older minority research participants. Monthly conference calls have enabled the leaders of the Community Liaison Cores to discuss problems and share ideas. To disseminate their findings and stimulate additional studies in this area, the RCMAR Community Liaison Cores have collectively produced the following publications and conferences:

- "The Science of Inclusion: Recruiting and Retaining Racial and Ethnic Elders in Health Research" – a special issue of *The Gerontologist* (Vol. 43, No. 1, February 2003).

- "Development of Community-Based Partnerships in Minority Aging Research" – a pre-conference workshop of the 57th Annual Scientific Meeting of the Gerontological Society of America (Washington, DC, November 19, 2004).

- "Increasing the Participation of Older Minorities in Health Research" – a supplemental issue of the *Journal of Aging and Health* (Vol. 16, No. 5, November 2004).

- Collaborating with Community Leaders in Community-Based Participatory Research: What RCMAR Centers are Doing" – a special issue of *Ethnicity & Disease* (2007 ;(17)suppl 1).

- An ongoing annotated bibliography (posted on the RCMAR website) covering key issues in working with communities that is relevant to minority aging research.

Measurement and Methods Core activities. Each RCMAR has a Measurement and Methods Core responsible for developing and evaluating culturally sensitive tools for assessing the health status and needs of older minority populations. In addition to pursuing their own measurement studies, the centers as a group have used a variety of strategies to disseminate their findings to a broader audience and stimulate additional studies addressing the methodological issues that occur in conducting biomedical and behavioral research on minority aging. Collectively, the RCMAR Measurement and Methods Cores have produced several major publications and conferences, including the following:

- Two symposia on minority measurement issues presented at the 53rd Annual Scientific Meeting of the Gerontological Society of America (Washington, DC, November 2000).

- "Measurement in Older Ethnically Diverse Populations" – a special volume of the *Journal of Mental Health and Aging* (Vol. 7, No. 1, Spring 2001).

- "Measurement Issues in Addressing Health Disparities in the United States" – a conference to identify conceptual and psychometric issues that need to be addressed to improve the quality of self-report measures used in health disparities research (San Francisco, May 10-11, 2001).

- "Advancing Health Disparities Research: Can We Afford to Ignore Measurement Issues?" – an article in *Medical Care* summarizing the conference presentations at the San Francisco conference (Vol. 41, No. 11, November 2003).

- "Introduction to Assessing Health-Related Measures in Diverse Populations" – a pre-conference workshop at the 56th Annual Scientific Meeting of the Gerontological Society of America (San Diego, November 21, 2003).

- "Approaches for Developing/Adapting/Evaluating Health-Related Concepts and Measures in Diverse Older Populations" – a pre-conference workshop at the 58th Annual Scientific Meeting of the Gerontological Society of America (Orlando, November 18, 2005).

- "Measurement in a Multi-Ethnic Society" – a special issue of *Medical Care* (Vol. 44, No. 11 November 2006). An additional 150 copies were distributed to RCMAR scholars, faculty, and key researchers in the field by the Coordinating Center.

- An ongoing annotated bibliography (posted on the RCMAR website) describing different measurement instruments, assessments of their use in diverse populations, and other methodological issues relevant to minority aging research.

Study Question 4. To what extent have the RCMAR centers achieved the program's goals?

Selecting a diverse group of RCMAR scholars and providing them with mentoring and research support. As mentioned earlier under Study Question 2, the evaluation found that the RCMARs were very successful in selecting a diverse group of RCMAR scholars. Nearly all of the scholars who joined the program during FY 1997-2005 (97%) were members of a racial/ethnic minority group (see Exhibit 5). Approximately half (49%) were African American, 21% were Hispanic, 16% Asian, 10% AI/AN, and 1% Pacific Islander. The centers clearly placed a high priority on selecting minority scholars, and 5 of the 8 centers were successful in recruiting 100% of their scholars from minority groups. Altogether, 80% of the RCMAR scholars were members of racial/ethnic groups that are currently underrepresented among researchers (African Americans, Hispanics, Native Americans, Pacific Islanders). It was also found that 69% of the scholars were female and 31% were male (see Exhibit 6), with the percent of female scholars ranging between 63% to 86% per center. An additional analysis examining both variables (race/ethnicity

and gender) revealed that African American females constituted the highest proportion of scholars (39%), and only 10% of the scholars were African American males (see Exhibit 14).

Most of the RCMARs recruited 80-90% of their scholars from within their own research institutions, but two centers employed other models. Given the paucity of American Indians and Alaska Natives pursuing research careers, NERC actively recruited scholars from around the country without requiring them to relocate to Denver, resulting in 75% of its RCMAR scholars coming from other institutions. Another approach was used by CMA to recruit minority scholars. By forming partnerships with three minority-serving institutions in North Carolina, CMA was able to recruit 28% of its scholars from the faculty of these institutions.

Given the importance placed on mentoring in the RCMAR program, it was surprising to find that for 37% of the scholars it was not possible to identify their mentors from the center websites, aggregate reports, or other Coordinating Center data sources. To address this problem, the current center directors were asked to verify key information that had been collected on each of their scholars and fill in any missing information. The directors' responses were very helpful to the evaluation, particularly with respect to the "missing mentors." The percent of scholars with unidentified mentors was reduced to 14%, most of whom were from RCMAR I centers that are not currently active. For the 86% of scholars whose mentor was known, the study found that approximately one-third (32%) were mentored by teams of 2-3 senior investigators, with the percentage varying by center. At one center 75% of the scholars had mentoring teams, whereas only 17-18% of the scholars at two other centers had mentoring teams. The findings also revealed that the center directors were all involved in the mentoring process to some extent, serving as the sole mentor for 14% of the scholars and as a member of a mentoring team for another 18%, which may or may not have been advantageous to the scholars given the directors' other responsibilities. The average scholar-to-mentor ratio for the centers as a group was quite low (1.6 scholars per mentor) but there was considerable variation among the centers, with scholar-to-mentor ratios ranging from 1.1 to 4.0. It was also found that three former scholars served as mentors after they had completed their pilot projects.

In addition to individual mentoring, the RCMARs offered a variety of other research training activities to their scholars. Examples include the following:

- The Measurement and Methods Core at one center (CALME) developed a training internship program consisting of bi-weekly sessions to assist scholars in applying statistical techniques, developing culturally sensitive measures, conducting focus groups, and using other measurement tools. Special seminars were also held 3 times a year at which the scholars presented the current status of their research projects and received constructive feedback from 7-10 faculty members representing different departments. Each scholar's progress was updated using a pilot study summary grid, and detailed minutes of each seminar were distributed to all RCMAR participants.

- Another center (CHIME) offered their scholars a variety of training opportunities: (1) monthly seminars led by the Measurement and Methods Core; (2) monthly work-in-progress seminars where scholars presented their research and received feedback; (3) monthly academic advancement seminars to enhance the research skills of junior faculty and provide them with practical career advice; (4) a weekly seminar series covering different research topics; and (5) all-day retreats at which senior researchers, community advisers, and peers critiqued scholars' work to improve their manuscript preparation and grant-writing skills.

- One center (MCUAAAR) conducted three-day summer training workshops for their scholars and other diverse junior investigators from around the country, several workshops on applying different statistical techniques, and mini-conferences at which scholars presented their research.

- Two centers (CADC, CHAMP) offered a monthly seminar series which featured presentations by senior investigators; one of these centers distributed a DVD copy of a lecture on the art of publishing scientific work to all of their scholars.

- One center (CADC) developed an academic course entitled "Clinical Research with Diverse Communities" to give their scholars and other trainees an overview of special methodological considerations in conducting research in ethnically diverse populations.

- Three centers (CADC, CALME, CHIME) collaborated to offer their scholars training sessions (via teleconference) on the use of item response theory (IRT) in cross-cultural research.

- A highly structured research training program with intensive long-term mentoring was implemented by NERC in which junior AI/AN scientists from different academic institutions are brought together at regular intervals over a two-year period. During the first year, these RCMAR scholars complete a one-week mini-course covering writing skills, statistics, and selected topics relevant to AI/AN health, participate in several two-day meetings with senior researchers, develop/conduct a research project using secondary data, prepare a manuscript summarizing the project, and design a pilot study that requires primary data collection. During the second year, the scholars collect and analyze data for the pilot study, prepare a manuscript summarizing this study, and prepare an NIH-type grant application (usually for a K award) based on the results of the pilot study. The scholars' grant applications undergo an NIH-style mock study section review prior to actual submission at the end of the two-year cycle.

The evaluation also found that 25% of the RCMAR scholars who joined the program in FY 1997-2005 attended NIA's highly competitive Summer Institute on Aging Research, a week-long workshop that involves lectures, seminars, small group discussions in research design (including issues relevant to the aging of ethnic and racial minorities), and individual consultation on preparing and submitting NIH grant applications. There was substantial variation (from 6% to 45%), among the RCMARs with respect to the percent of their scholars attending the Summer Institute. It was also found that the percent of RCMAR scholars attending the Summer Institute has declined in recent years; 33% of the RCMAR I scholars but only 13% of the RCMAR II scholars attended one of the Summer Institutes.

In summary, the evaluation found that all of the RCMARs were successful in recruiting a diverse group of scholars and providing them with mentoring. It is noteworthy that mentoring was rated as the most important component of the RCMAR program by the scholars who responded to the web/mail survey, especially by those who were most successful in publishing their research and obtaining research funding.

Funding and overseeing at least 3 pilot projects per year. As shown in Exhibit 4, 183 junior investigators joined the program during FY 1997-2005 as RCMAR scholars, with the number varying from year to year. A total of 197 pilot projects were funded, each with a RCMAR scholar serving as lead investigator (see Exhibit 15). The two graphs are not identical because 17 scholars received funding for more than one pilot project (including 5 whose projects were renewed) and 23 scholars (from two of the RCMAR I centers) participated in team pilot projects that involved 2 to 3 scholars. The evaluation revealed that there was considerable variation among the RCMAR I centers with respect to the average number of pilot projects they initiated each year, which ranged between 1.6 to 5.0 projects per center. During RCMAR II, the average increased to between 3.3 and 4.5 projects per center.   In general, the findings were positive; 4 of the 6 RCMAR I centers and all of 6 RCMAR II centers initiated more than 3 pilot projects per year on average, and the overall average for centers during the nine-year period was 3.6 pilot projects per year.

Forming collaborative partnerships with community organizations and other research centers. To share their experiences and learn from each other, the RCMAR Community Liaison Cores as a group held monthly conference calls, organized a national workshop on the development of community-based partnerships, and produced scientific publications on this topic (as previously described for Study Question 3). The evaluation also found that the RCMARs in their work with community organizations applied the principles of community-based participatory research (CBPR), a model of community engagement that is based on equitable partnerships between academic researchers and the community participating in the research.

All of the RCMARs were proactive in working with community-based organizations (CBOs), local service agencies, and other researchers interested in improving the health of minority elders. Commonly used outreach strategies included the following:

- Attending meetings sponsored by organizations serving minority communities (e.g., churches, tribal committees, health centers, social service agencies).

- Working with the leaders of faith-based organizations, community groups, and health agencies to coordinate health-related programs.

- Participating in workshops and seminars sponsored by local organizations.

- Participating in community events aimed at health promotion (health fairs, wellness days), which often involved assisting in the planning phase, providing language translation, and offering free medication reviews or health screenings to seniors (e.g., cholesterol, blood pressure, and glucose readings).

- Giving health education presentations in community settings on topics of interest to seniors (e.g., nutrition, exercise, hypertension, diabetes, osteoporosis, breast cancer).

- Developing and distributing a resource directory describing community services available to seniors.

- Attending receptions honoring community activists and CBO contributions.

- Helping community organizations with fundraising.

Many of the RCMARs were quite innovative in their outreach activities. For example, one center (CADC) collected information about the other organizations participating in health fairs and used it to create a community network database to help them schedule outreach activities with local churches, CBOs, and clinics serving different minority populations. MCUAAAR established a Healthier Black Elder Center, bringing together a diverse group of educators, community members, and researchers interested in improving the health of older adults living in the Metropolitan Detroit area. NERC used RCMAR funds to enhance a TeleHealth/TeleEducation network serving several reservation-based Native American communities and provide health education and clinical services to several tribes via real-time videoconferencing. Another center (CALME) used an assortment of outreach strategies recommended by their community advisory board to reach minority communities and organizations, including the following:

- Arranging for medical, nursing, and dental students to gain practical experience interacting with elderly minority populations by conducting health discussions and blood pressure screenings in nursing homes and senior centers.

- Producing a monthly cable television program featuring medical researchers, community organizations, and selected guest speakers discussing health issues relevant to the elderly minority community in northern Manhattan, with many programs transmitted in Spanish.

- Co-sponsoring a mobile van with bilingual clinicians to provide free health and dental screenings in minority elder communities.

Most of the RCMARs were successful in recruiting local community leaders and representatives from programs caring for the elderly (e.g., senior citizen centers, nursing homes) to serve on a community advisory board. In most cases, the advisory board met about once a year and offered suggestions on how RCMAR investigators could improve their understanding of minority elders' needs, develop relationships with community-based organizations serving these populations, and share their research findings with the community. The advisory boards of two centers (CALME and CHIME) paired RCMAR scholars with community leaders who helped them work with CBOs serving populations relevant to their research. In other cases (CMA, MCUAAAR), the primary function of the advisory board was to review proposed research projects and help RCMAR investigators introduce research to the community in a non-intrusive way. At another center (CHAMP), the committee focused primarily on advising the RCMAR core leaders on ways to improve institutional incentives needed to recruit more minority medical and health professional faculty and students and ways to increase institutional support for research aimed at reducing health disparities.

In addition to collaborating with community organizations, half of the centers reported that they had established formal partnerships with CBOs and/or been invited to serve on CBO advisory boards. Collaborative partnerships with other research centers were evident at most of the RCMARs, especially at the institutions that also had an EXCEED, EXPORT, and/or OAIC Pepper center. In some of these cases, two research centers shared a community advisory board, and in other cases, they developed joint mentoring programs for their junior investigators.

In summary, the evaluation found that all of the RCMARs were successful in forming collaborations with a variety of community-based organizations, local health agencies, and other researchers interested in improving the health of minority elders. Most of the centers went a step further and established formal partnerships with community organizations and/or other research centers. It is expected that the number of formal collaborations between RCMAR researchers and community participants will continue to increase, recognizing that community-based participatory research is a long-term process that involves many challenges.

Developing and implementing strategies to recruit and retain minority populations in studies involving minority aging research. The RCMAR community advisory boards and collaborations with CBOs were found to be extremely useful to the centers in their efforts to recruit minority elders, a group that has traditionally been very resistant to participating in research. With the help of their community advisers, the centers used a variety of strategies to encourage minority elders to participate in their studies, including the following:

- Conducting focus groups and mail surveys to assess the health needs of minority communities and their perceptions of research.

- Working with CBOs, local clinicians, and other researchers to develop a database of potential research participants.

- Analyzing secondary data (e.g., Medicaid and Medicare databases, state and local datasets, ongoing surveys conducted by the National Center for Health Statistics) to obtain information on the characteristics and health needs of local minority elder communities.

- Working with other researchers to develop and assess recruitment and retention strategies.

- Assisting in recruiting minority elders for other research studies.

- Holding information sessions with community groups to address their questions about participating in research.

- Conducting a series of short health education lectures (frequently bilingual) at senior centers, housing projects, and faith-based organizations on topics of interest to minority elders, with each talk followed by an explanation of a particular research project. Individuals interested in participating in the study were encouraged to enroll and brochures were distributed describing the study and how to become a participant.

- Securing commitments from community organizations to participate as recruitment sites for specific research studies.

- Setting up recruitment booths at community events and distributing flyers to interested individuals.

- Sending notices about new research studies to community leaders.

- Posting information about open studies on the center's website.

- Developing public service announcements (PSAs) to increase the recruitment of minority groups in research studies.

- Contacting individuals who refuse to participate in a study to understand the reasons for their decision and identify common barriers to participation.

- Conducting studies to examine the effectiveness of different recruitment strategies (e.g., comparing the effectiveness of different approaches, assessing the validity of current address information to be used in mail surveys).

The RCMAR Community Liaison Cores as a group also published a special volume of *The Gerontologist* summarizing the scientific literature and discussing a broad range of issues involving the recruitment and retention of older minority individuals in health research.

In summary, the evaluation found that the RCMARs used many different strategies to recruit minority elders for their research studies, and several centers developed a central database of potential research participants. Because there is no program-wide mechanism for tracking the number of participants who were recruited for RCMAR research projects, the relative success of different strategies could not be determined. However, given that the pilot projects were of relatively short duration (minimizing retention problems) and that only three pilot projects were reported as being terminated early, it is assumed that the RCMARs' recruitment strategies were generally successful.

Creating and evaluating measurement tools to increase their effectiveness with diverse older populations. As described in the findings for Study Question 3, the RCMAR Measurement and Methods Cores as a group demonstrated national leadership in producing a variety of conferences, workshops, and major publications addressing measurement issues relevant to minority aging research. Another major contribution was the creation and maintenance of an annotated bibliography of references relevant to minority aging research. The current version (posted on the RCMAR website) includes a large number of measurement studies assessed by RCMAR centers in the following areas:

- Identifying the causal mechanisms by which social inequities are translated into health disparities

- Measuring race and ethnic identity.

- Using focus groups to develop culturally sensitive measures.

- Measuring cognition in older, ethnically diverse populations.

- Using item response theory (IRT) and differential item functioning (DIF) to improve the validity of assessment scales used in cross-cultural research.

In addition to this bibliography, all of the current RCMAR websites include extensive information on culturally sensitive health-related measures for use in diverse populations as well as links to specific instruments, databases, analyses, and other websites addressing measurement issues relevant to minority aging research. One website includes a message board where researchers can discuss with colleagues the problems they have encountered using different survey instruments.

RCMAR investigators have assessed a broad range of measurement tools since FY 1997. In addition to analyzing existing tools (such as the SF-36, MOS Social Support Survey, CES-D, CAHPS, MMSE, and SUPERPFP Symptoms Scale), they have developed new tools to measure qualitative constructs that are especially important in minority aging research (e.g., patient satisfaction, quality of care, use of alternative services, patient-provider communication, sources of social support, religiosity/spiritualism, attitudes toward research).

An analysis of the publications of RCMAR scholars found that at 6 of the 8 RCMARs, one or more scholars had published journal articles that focused on measurement issues, with the scholars frequently serving as lead authors. Typical examples of scholars' first-authored papers in this area include the following:

- Conceptualizing and categorizing race and ethnicity in health services research.

- Racial misclassification and disparities in cardiovascular disease among American Indians and Alaska Natives.

- Modifying a breast cancer survey for African American women.

- A semantic verbal fluency test for English- and Spanish-speaking older Mexican Americans.

- Surveying minorities with limited English proficiency: does the data collection method affect the data quality among Asian Americans?

- Comparing self-reported versus objectively measured physical activity behavior: a preliminary investigation of older Filipino American women.

- The California Health Interview Survey 2001: translation of a major survey for California's multiethnic population.

- Assessing the reliability of the EORTC QLQ-C30 in a sample of older African American and Caucasian adults.

- Reliability of self-reported neighborhood characteristics.

In summary, the evaluation found that all of the RCMARs were active in developing and evaluating measurement tools to increase their effectiveness with diverse older populations, and a majority of the centers made major contributions in this area.

Disseminating research information and new findings to various scientific and non-scientific audiences. The RCMARs used several strategies to communicate with their local communities and provide feedback on the results of their research studies, including the following:

- Producing a newsletter once or twice a year (a bilingual newsletter, in one case). In addition to describing the center's research studies and findings, the newsletters were also used to introduce RCMAR scholars to the community, convey scientific health information in lay terms, and publicize community events of interest to minority elders.

- Developing and maintaining a website with links to health education materials and research projects.

- Sponsoring seminars, conferences, and community events to raise awareness of research in the community, disseminate research findings, and provide a forum for discussing research with members of the community.

- Producing videos for tribal cable television networks on health topics and research findings relevant to reservation-based communities.

- Participating in radio and television talk shows to discuss the center's research and recent findings.

- Holding press conferences and distributing press releases highlighting research studies and their results.

- Providing opportunities for RCMAR scholars to present their research findings in poster sessions and oral presentations to scientific and non-scientific audiences.

- Publishing research results in scientific journals.

- Presenting research results at national conferences.

- The Coordinating Center convened a one-day program at one center for journalists and researchers to discuss disparities in health and health care for African Americans.

In summary, the evaluation found that all of the RCMAR centers were successful in sharing their research findings with other scientists, and a majority of the centers created newsletters and other mechanisms to distribute research information and new findings to members of the minority elder community and community-based organizations.

Increasing the number of PHS-funded investigators and grants addressing minority aging research.
To assess how successful the RCMAR institutions were in increasing the number of investigators and grants involving minority aging issues, comparisons were made between their recent performance in FY 2004-2005 and their performance prior to RCMAR in FY 1996-1997, using the same methodology that was used to answer Study Question 1 (described in Appendix C). The results showed that the numbers of grants increased between the two RCMAR cohorts, as shown in Exhibits 16A-16C. This finding may be attributable to improvements in the process used to select the RCMAR II awardees since both groups had similar research experience at baseline and 4 of the 6 institutions in each group were identical. A closer examination of the 4 institutions that had been successful in having their grants renewed showed that the number of their PIs pursuing minority aging research increased by 74%, on average, and their grants in this field increased by 81% during the period. The results were also very positive for the 8 RCMAR institutions as a group even though half of them did not receive RCMAR funding for the entire period; their pool of PIs pursuing minority aging research increased by 84%, on average, and their grants in this field increased by 73%. The 73% increase in the number of these awards was substantially higher than the 46% overall increase in NIH research grants awarded during the eight-year period from FY 1996-1997 to FY 2004-2005.

Comparing RCMAR institutions with other academic institutions. To assess whether the RCMAR institutions could have achieved similar accomplishments if they had not participated in the program, the six RCMAR I institutions were compared with another group of institutions, using the methodology described in Appendix C. It was decided that the most appropriate comparison group would be the six highest scoring applicant institutions that did *not* receive RCMAR funding in FY 1997 (or subsequently). Statistical analyses were conducted to assess whether the RCMAR institutions as a group were more

successful than the comparison group in increasing the number of PHS-funded investigators and grants addressing minority aging research during the period FY 1996-1997 to FY 2004-2005. The results are shown in Exhibits 17 and 18. With respect to the number of investigators, the analyses revealed that the RCMAR I institutions as a group had a significantly greater increase in the number of PIs conducting minority aging research than the comparison group ($p < .025$, one-tailed t-test for independent samples). On average, the RCMARs had an increase of 15 PHS-funded investigators pursuing minority aging research during this period and the comparison institutions had an increase of 5 investigators of this type. The average percentage change in the number of investigators, however, was much lower for the RCMARs than the comparison institutions (59% vs. 153%) in large part because the comparison institutions had very few investigators of this type in FY 1996-1997; they had only 4 investigators, on average, compared to 25 for the RCMAR I institutions.

With respect to the number of grants, the results showed that the RCMAR I institutions as a group had a significantly greater increase in the number of grants addressing minority aging research than the comparison group ($p < .033$, one-tailed t-test for independent samples). On average, the RCMARs had an increase of 21 PHS grants of this type during the period and the comparison institutions had an increase of 7 grants. As was found for the investigators, however, the average percentage change in the number of grants was lower for the RCMARs than the comparison institutions (66% vs. 224%) in large part because the comparison institutions had very few grants of this type in FY 1996-1997; they had only 5 grants, on average, compared to 28 for the RCMAR I institutions.

Although these findings indicate that the RCMAR I institutions as a group were very successful in increasing the number of PHS-funded investigators and grants addressing minority aging research during this period, the findings also indicate that the comparison group was not ideal. Although the institutions in the comparison group were interested in pursing minority aging research (since they all applied for a RCMAR grant), they were not in fact comparable to the group of successful applicants at baseline (FY 1996-1997) with respect to the number of PHS-funded investigators and grants addressing minority aging research. The RCMAR institutions were selected for their research excellence and productivity thus making this comparison somewhat biased. However, the change in numbers even in these institutions is impressive. For this reason, another approach should be considered in future studies to determine whether similar accomplishments could have occurred without the RCMAR program.

Study Question 5. To what extent have the RCMAR scholars achieved the program's goals?

This study question was designed to assess how many of the 183 scholars who joined the RCMAR program during FY 1997-2005 were successful in accomplishing specific goals relevant to pursuing a career involving minority and/or aging research.

Publishing research in peer-reviewed scientific journals. The study found that 74% of the scholars published at least one article in a peer-reviewed journal after joining RCMAR and 57% were first authors. The findings were positive, as can be seen by comparing the scholars' recent publication rates with their rates at baseline (see Exhibits 19A-19C). In addition, 34% of the scholars published more than 5 new articles (14% had more than 5 first-authored articles) by July 2006. The scholars who published after joining RCMAR averaged 1.3 articles per year (median average). Surprisingly, the percentage who published was not much higher for the RCMAR I scholars; 76% published at least one new article and 62% were first authors after joining RCMAR. However, a larger proportion of the scholars in the first cohort than the second cohort (43% vs. 25%) had published over 5 new articles by July 2006. This study question was answered using the same procedure used for Study Question 2, except that the publication

counts reflected articles published after the scholar's first year (to account for publication delays). The findings were positive and indicate that a large proportion of the RCMAR scholars were successful in publishing their research.

Competing successfully for a research grant. Whereas only a small proportion of the RCMAR scholars (20%) had applied for a PHS grant before joining RCMAR, the evaluation found that 46% applied for one or more PHS grants after joining the program. A similar trend was found for PHS grant awards; whereas only 13% had received a PHS grant prior to RCMAR, 28% received one or more PHS grants after joining the program (see Exhibit 20A-20C). If non-PHS grants are included, the study found that over one-third of the scholars (35%) were successful in receiving at least one competitive grant after joining RCMAR by July 2006. Most of the grants they received were designed for individuals who had completed their postdoctoral training and were in the early stages of a research career (e.g., K career development awards, small research grants, grants awarded by non-profit foundations and non-PHS agencies), as shown in Exhibit 21. Nevertheless, 5% of the scholars were successful in getting an R01 and 10% in getting an R03 or another type of R grant after joining RCMAR. The findings were positive, as can be seen by comparing the scholars' recent grants with their grants at baseline. Additional analyses revealed that the average length of time to receive a PHS grant (for the 27% of RCMAR scholars who received such an award) was 2.6 years, and the average length of time to receive an R01 (for the 5% of scholars who received such an award) was 3.2 years after joining the program.

Pursuing a career involving aging research and/or research aimed at reducing health disparities. Several strategies were used to try to determine the type of position each RCMAR scholar held as of July 2006. In addition to obtaining information from the center directors and program documents, IMPAC II and web searches were conducted to obtain as much data as possible on each scholar. The results showed that 74% of the scholars were now in full-time academic positions that would allow them to pursue research (see Exhibit 22); specifically, 46% were assistant professors, 14% were associate professors, 5% were full professors, and 9% were in research positions. Another 8% were in medical positions, 6% were instructors or adjunct faculty members, and 3% served in non-faculty positions that were less likely to involve research. In addition, 4% of these scholars were still in postdoctoral fellowship programs and 5% were still graduate students interested in pursuing research careers. The findings were positive, as can be seen by comparing the scholars' most recent academic positions with the positions they held when they entered the program. The study also found that three scholars joined the faculty of another RCMAR institution during the program's first eight years. Another interesting finding was that only 62% of the 183 scholars (and 65% of the 108 RCMAR I scholars) were working in RCMAR institutions as of July 2006, a finding that indicates progress in achieving one of the program's overarching goals: to increase diversity in the professional workforce pursuing research on minority aging.

There were very positive results with respect to the type of research the scholars were pursuing after they joined the RCMAR program. Based on an analysis of the scholars' scientific publications, PHS grant applications and awards, and other grant awards after they joined RCMAR, it was found that the proportion of scholars engaged in minority aging research had nearly tripled (rising from 20% to 56%) and the proportion engaged in minority *and/or* aging research had risen from 52% to 74% (see Exhibit 23). Approximately one-fourth of the scholars (26%) had not published or applied for a research grant in either area as of July 2006, in some cases because they had not been in the program very long and in other cases because they were now in medical or other positions that did not involve research.

To assess the overall research success of the RCMAR scholars, each person's productivity was rated as follows:

> 5 = at least one R01 grant + 2 or more publications (at least one first-authored).

4 = at least one non-R01 PHS grant + 2 or more publications (at least one first-authored).

3 = at least one grant of any type + one or more publications.

2 = no grants + an average of at least one publication per year (at least one first-authored).

1 = no grants + one or more publications.

0 = no grants + no publications.

Each scholar was given only one rating based on an analysis of his/her peer-reviewed publications, PHS grants, and other grants received after joining RCMAR. The evaluation found that 75% of the scholars who joined the program during FY 1997-2005 were rated above 0 based on their grant and publication record after joining RCMAR (see Exhibit 24). A few of the scholars who were given a score of 0 had applied for a PHS grant but were unsuccessful, probably because they had no scientific publications. The study also found that 36% of the scholars who joined during FY 1997-2005 were rated 3 or higher, having published and also received at least one new grant; as before, the percentage was a bit higher (41%) for the scholars who joined during FY 1997-2003. Altogether, 10 scholars (9 of whom were RCMAR I scholars) received the highest rating of 5; two of these individuals were extremely successful, having each received two R01s by July 2006.

Identifying scholars who are most likely to succeed. To assess the extent to which "scholars with strong potential" can be identified from their baseline characteristics, additional analyses were conducted for the group of scholars who joined RCMAR during FY 1997-2003. As mentioned above, 41% of the 151 scholars in this group achieved a rating of 3 or higher (because they had published and received at least one new grant) and 59% received a lower rating. Separate analyses were conducted for each baseline characteristic to determine the proportion of scholars with that characteristic who were subsequently successful in achieving a rating of 3 or higher. The results not only indicate different groups' relative success rates but also provide preliminary evidence of which groups need to be most targeted, recognizing that there was substantial variation within each group.

The first analysis involved the scholars' race/ethnicity and gender. With respect to race/ethnicity, the study found that 73% of the Hispanic scholars and 54% of the AI/ANs achieved a rating of 3 or higher. With respect to gender, 61% of the male scholars and 38% of the females received this rating. An additional analysis examining both variables (race/ethnicity and gender) revealed that Hispanic males had the best success rate (87% had a 3+ rating), followed by AI/AN males (67%), Hispanic females (60%), and Asian males (56%).

An analysis comparing scholars with different types of doctoral degrees found that the PhD scholars were somewhat more successful than the MD scholars; 47% of PhDs, 39% of MDs, and 38% of MD/PhDs achieved a rating of 3 or higher. The scholars who were most successful, however, were those who had a Master's of Public Health (MPH) degree in addition to a doctorate degree of any type; 64% of this group were rated 3 or higher. With respect to academic position, the results showed that 48% of the scholars who held a full-time position conducive to research (assistant professor, associate professor, full professors, or a research position) had a 3+ rating, compared to 28% of the scholars who held another type of position when they joined the program (medical position, instructor, adjunct faculty member, non-faculty position, postdoctoral fellow, or graduate student).

With respect to previous publications, 86 of the 151 scholars (57%) who joined RCMAR during FY 1997-2003 had published in peer-reviewed journals before RCMAR, averaging 4.2 articles per scholar (omitting outliers). Of this group, 53% were very successful after joining RCMAR, achieving a rating of 3 or higher. Of the 65 scholars who had no previous publications, only 25% achieved this level of

success. A further examination of publications found that 67 of the 151 scholars (44%) had been the lead author on at least one publication, averaging 2.5 first-authored articles per scholar (omitting outliers). Of this group, 56% had a 3+ rating; of the 84 scholars who had no previous first-authored publications, only 29% received such a rating.

As expected, the results showed that the scholars who had at least some experience in minority research, aging research, or both areas when they joined the program were more successful than the scholars who had no previous research experience in any of these areas; 55% of the scholars with such previous experience achieved a rating of 3 or higher, compared to 28% of those with no experience in these areas (based on an analysis of their previous publications, PHS grant applications, and PHS grant awards). Examining the different areas of research, the study found that 63% of the scholars who had experience in both minority and aging research had a 3+ rating, compared to 56% of those whose experience was only in minority research and 43% of those whose experience was only in aging research.

Regarding the type of research the scholars pursued in RCMAR, the study found that 45% of the scholars whose pilot projects involved behavioral or social research achieved a rating of 3 or higher, compared to 35% of the scholars whose projects involved clinical or basic research. A more detailed analysis revealed that the most successful scholars were those whose pilot projects focused on population and social processes (50% had a 3+ rating), followed by those with projects focused on individual behavioral processes (43%), basic research (40%), and clinical research (33%).

The evaluation also found that there was considerable variation among the 8 RCMARs with respect to their scholars' success. Three centers (one of which joined the program as a RCMAR II center) were remarkably successful, with 58-63% of their scholars achieving a rating of 3 or higher. All three centers offered a variety of research training activities to their scholars in addition to placing a high emphasis on individual mentoring.

In summary, the findings regarding the scholars' achievements were clearly positive; 5% of the scholars had an R01 grant, 27% had at least one PHS grant, 36% had some type of research grant, and 76% published one or more scientific papers after joining RCMAR. The analyses of scholars' baseline characteristics found that certain types of scholars did especially well, specifically, Hispanics and AI/ANs, males, scholars who had both a doctorate and an MPH degree, scholars holding tenure-track academic positions or research positions, scholars with previous experience in minority and/or aging research, scholars whose pilot projects involved behavioral or social research, and scholars at centers that emphasized mentoring and offered a variety of research training activities to their scholars.

CONCLUSIONS TO THE STUDY

The evaluation of the RCMAR program was a comprehensive assessment of the progress made by the RCMARs and their scholars during the program's first eight years. An evaluation advisory panel consisting of three highly regarded experts in the field of aging research reviewed the study's findings, assessed the early impact of RCMAR funding, and provided advice to NIA regarding mid-course corrections and the long-term direction and value of the RCMAR program. Their report is presented in Section I.

The findings of the evaluation were generally positive and are expected to be helpful to NIA administrators, center directors, and other RCMAR participants in broadening their understanding of the program, enhancing the recruitment and mentoring of scholars, and improving the operations and outputs of the centers. The extensive amount of data collected for the evaluation should serve as a valuable resource in tracking the future progress of the centers and their scholars. In addition to contributing to program accountability, the study included the development of the RCMAR Scholar Database and new analytical methodologies designed to be useful to NIA and the RCMAR Coordinating Center as well as other IC administrators and researchers interested in assessing changes in an NIH research portfolio over a specified time period. It is hoped that all those who manage, fund, or provide other support for research center programs aimed at increasing diversity in the professional workforce and/or improving the health of older minority populations will be encouraged by the findings of the evaluation.

Overview of the RCMAR Centers

RCMAR Center	Funding Period	Center Director (Principal Investigator)	Participating Institutions and Schools	Primary Minority Communities for Aging Research Studies
Center for Aging in Diverse Communities (CADC)	FY 1997 - present	Eliseo J. Perez-Stable, MD	University of California, San Francisco (UCSF) • School of Medicine • School of Nursing • Institute for Health and Aging	African American, Latino, and Asian American elders living in the San Francisco area
Columbia Center for the Active Life of Minority Elders (CALME)	FY 1997 - present	Rafael A. Lantigua, MD	Columbia University • College of Physicians and Surgeons • School of Public Health • Harlem Hospital Center • Taub Institute (Alzheimer's Disease Research Center)	Latino and African American elders living in the Washington Heights/Inwood community (primarily Latinos) and the Harlem community (primarily African Americans) in northern Manhattan, NYC
Michigan Center for Urban African American Aging Research (MCUAAAR)	FY 1997 - present	James S. Jackson, PhD Peter A. Lichtenberg, PhD (co-PI)	University of Michigan • Institute for Social Research • School of Nursing • School of Public Health Wayne State University • Institute of Gerontology • School of Nursing • Center for Urban Studies	African Americans elders living in the Detroit area
Native Elder Research Center (NERC)	FY 1997 - present	Spero M. Manson, Ph.D	University of Colorado Health Sciences Center (U Colorado HSC) • Department of Psychiatry • Division of American Indian and Alaska Native Programs	Native American elders living in tribal communities near Denver (Oglala Sioux, Rosebud Sioux, Navajo Nation, Cherokee Nation) and Native elders living in the Seattle area

RCMAR Center	Funding Period	Center Director (Principal Investigator)	Participating Institutions and Schools	Primary Minority Communities for Aging Research Studies
Center on Minority Aging (CMA)	FY 1997-2002	Elizabeth Mutran, PhD	University of North Carolina (UNC), Chapel Hill • School of Public Health • Institute on Aging East Carolina University North Carolina Central University Fayetteville State University	African American elders living in urban and rural counties surrounding Greenville, Durham, and Fayetteville, NC
Resource Center for African American Aging Research (RCAAAR)[1]	FY 1997-2002	Barbara C. Tilley, PhD	Henry Ford Health System (HFHS) • Minority Center for Medical Treatment Effectiveness • Division of Biostatistics and Research Epidemiology	African American elders living in southeast Michigan who are enrolled in the Henry Ford Health System
SC Cooperative for Healthy Aging in Minority Populations (CHAMP)	FY 2002-present	Barbara C. Tilley, PhD	Medical University of South Carolina (MUSC) • College of Medicine • Department of Biometry and Epidemiology	African American elders living in South Carolina
UCLA/Drew Center for Health Improvement for Minority Elderly (CHIME)[2]	FY 2002-present	Carol M. Mangione, PhD	University of California, Los Angeles (UCLA) • School of Medicine • School of Public Health • Neuropsychiatric Institute Charles R Drew University of Medicine and Science	African American and Latino elders living in South Central Los Angeles

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[1] The RCMAR I Coordinating Center was initially located at HFHS under the direction of Dr. Barbara Tilley. It was moved to MUSC in 2000 when Dr. Tilley joined the faculty at that institution.

[2] The RCMAR II Coordinating Center was established at UCLA in 2002 under the direction of Dr. Janet Frank.

Evaluation of the RCMAR Program

Timeline of RCMAR Awards

Lead Institution	RCMAR I					RCMAR II					RCMAR III
	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
HFHS	X	X	X (PI change)	X	X (PI change)						
UNC Chapel Hill	X	X	X	X	X						
UCSF	X	X	X	X	X	X	X	X	X	X	X
U Colorado HSC	X	X	X	X	X	X	X	X	X	X	X
U Michigan	X	X	X	X	X	X	X	X	X	X	X
Columbia U	X	X	X	X	X	X	X	X	X	X	
UCLA						X	X	X	X	X	X
MUSC						X	X	X	X	X	
U Pennsylvania											X
U Alabama at Birmingham											X
Coord Center at HFHS	X	X									
Coord Center at MUSC			X	X	X						
Coord Center at UCLA						X	X	X	X	X	X

NOTE: HFHS's original PI (and Coordinating Center Director) moved to MUSC in 1999; the RCMAR stayed at HFHS while the Coordinating Center moved to MUSC.

Exhibit 2

CONCEPTUAL FRAMEWORK
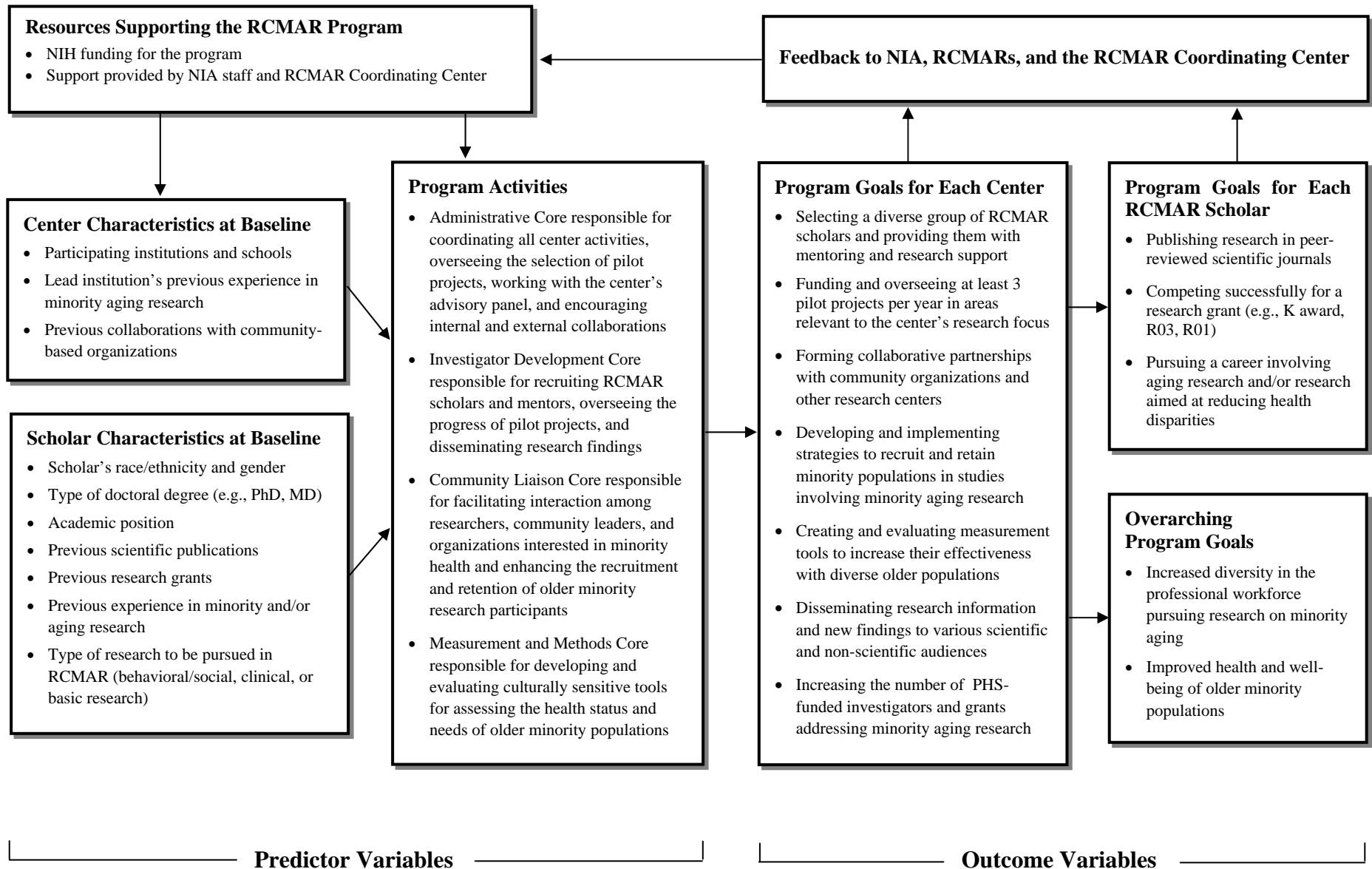## FOR THE EVALUATION OF THE RCMAR PROGRAM

Resources Supporting the RCMAR Program
- NIH funding for the program
- Support provided by NIA staff and RCMAR Coordinating Center

Feedback to NIA, RCMARs, and the RCMAR Coordinating Center

Center Characteristics at Baseline
- Participating institutions and schools
- Lead institution's previous experience in minority aging research
- Previous collaborations with community-based organizations

Scholar Characteristics at Baseline
- Scholar's race/ethnicity and gender
- Type of doctoral degree (e.g., PhD, MD)
- Academic position
- Previous scientific publications
- Previous research grants
- Previous experience in minority and/or aging research
- Type of research to be pursued in RCMAR (behavioral/social, clinical, or basic research)

Program Activities
- Administrative Core responsible for coordinating all center activities, overseeing the selection of pilot projects, working with the center's advisory panel, and encouraging internal and external collaborations
- Investigator Development Core responsible for recruiting RCMAR scholars and mentors, overseeing the progress of pilot projects, and disseminating research findings
- Community Liaison Core responsible for facilitating interaction among researchers, community leaders, and organizations interested in minority health and enhancing the recruitment and retention of older minority research participants
- Measurement and Methods Core responsible for developing and evaluating culturally sensitive tools for assessing the health status and needs of older minority populations

Program Goals for Each Center
- Selecting a diverse group of RCMAR scholars and providing them with mentoring and research support
- Funding and overseeing at least 3 pilot projects per year in areas relevant to the center's research focus
- Forming collaborative partnerships with community organizations and other research centers
- Developing and implementing strategies to recruit and retain minority populations in studies involving minority aging research
- Creating and evaluating measurement tools to increase their effectiveness with diverse older populations
- Disseminating research information and new findings to various scientific and non-scientific audiences
- Increasing the number of PHS-funded investigators and grants addressing minority aging research

Program Goals for Each RCMAR Scholar
- Publishing research in peer-reviewed scientific journals
- Competing successfully for a research grant (e.g., K award, R03, R01)
- Pursuing a career involving aging research and/or research aimed at reducing health disparities

Overarching Program Goals
- Increased diversity in the professional workforce pursuing research on minority aging
- Improved health and well-being of older minority populations

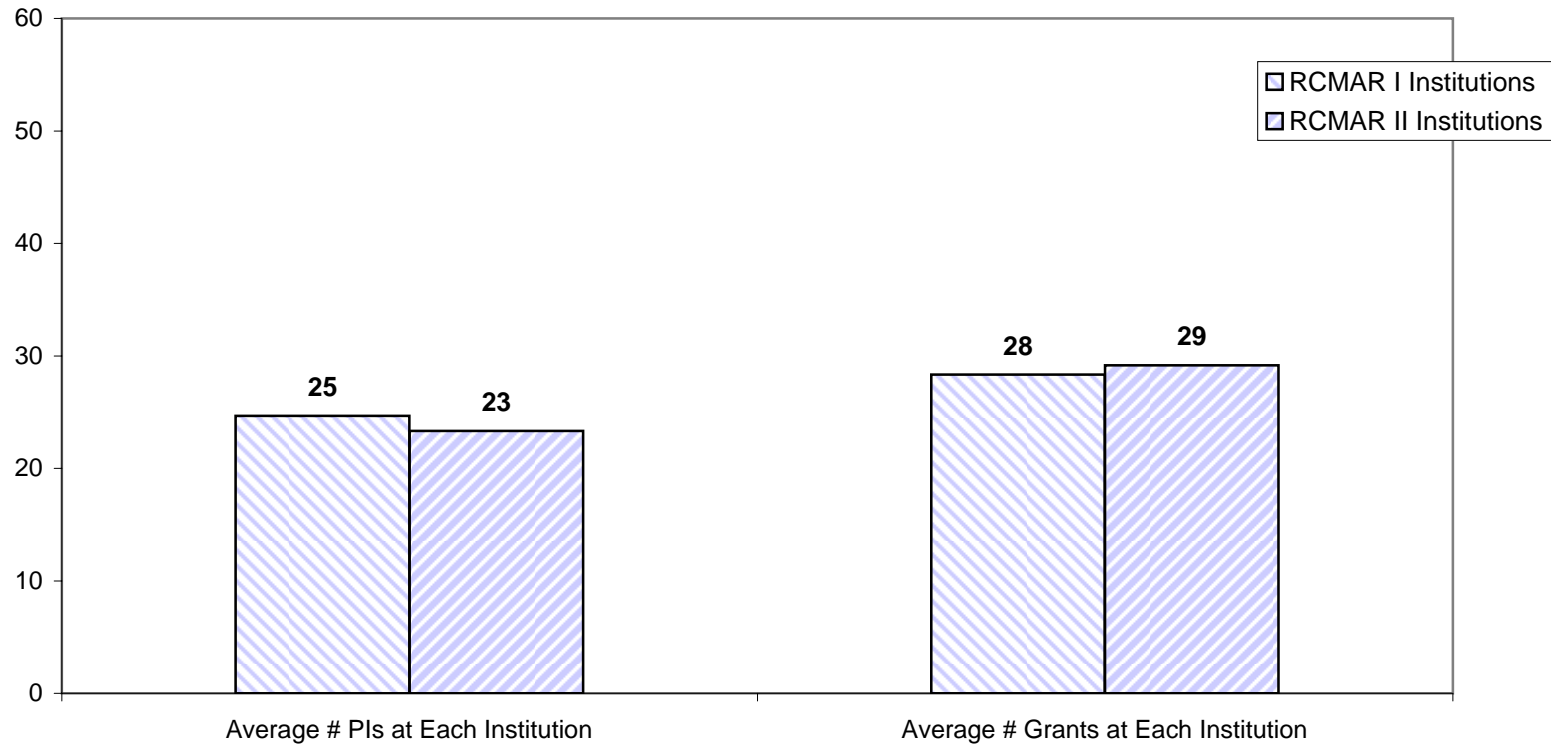**Predictor Variables** ———————————— **Outcome Variables**
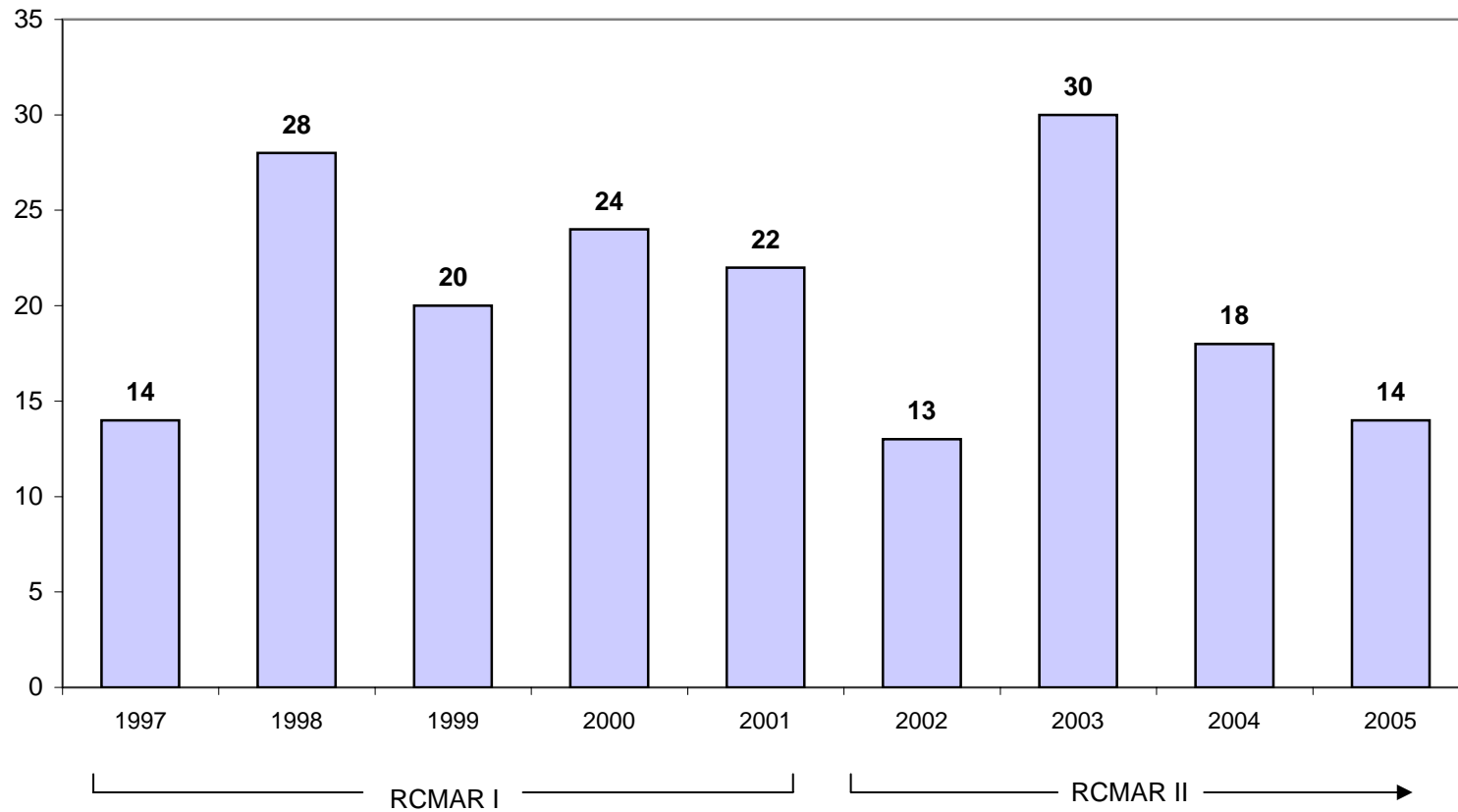
Exhibit 3

Evaluation of the RCMAR Program

Number of PHS-Funded Investigators and Grants at RCMAR Institutions
Addressing Minority Aging Research in FY 1996-1997

Note: The results are based on an analysis of all competing and noncompeting PHS grants awarded to the RCMAR lead institutions during FY 1996-1997 that involved minority aging research. Data source: CRISP.
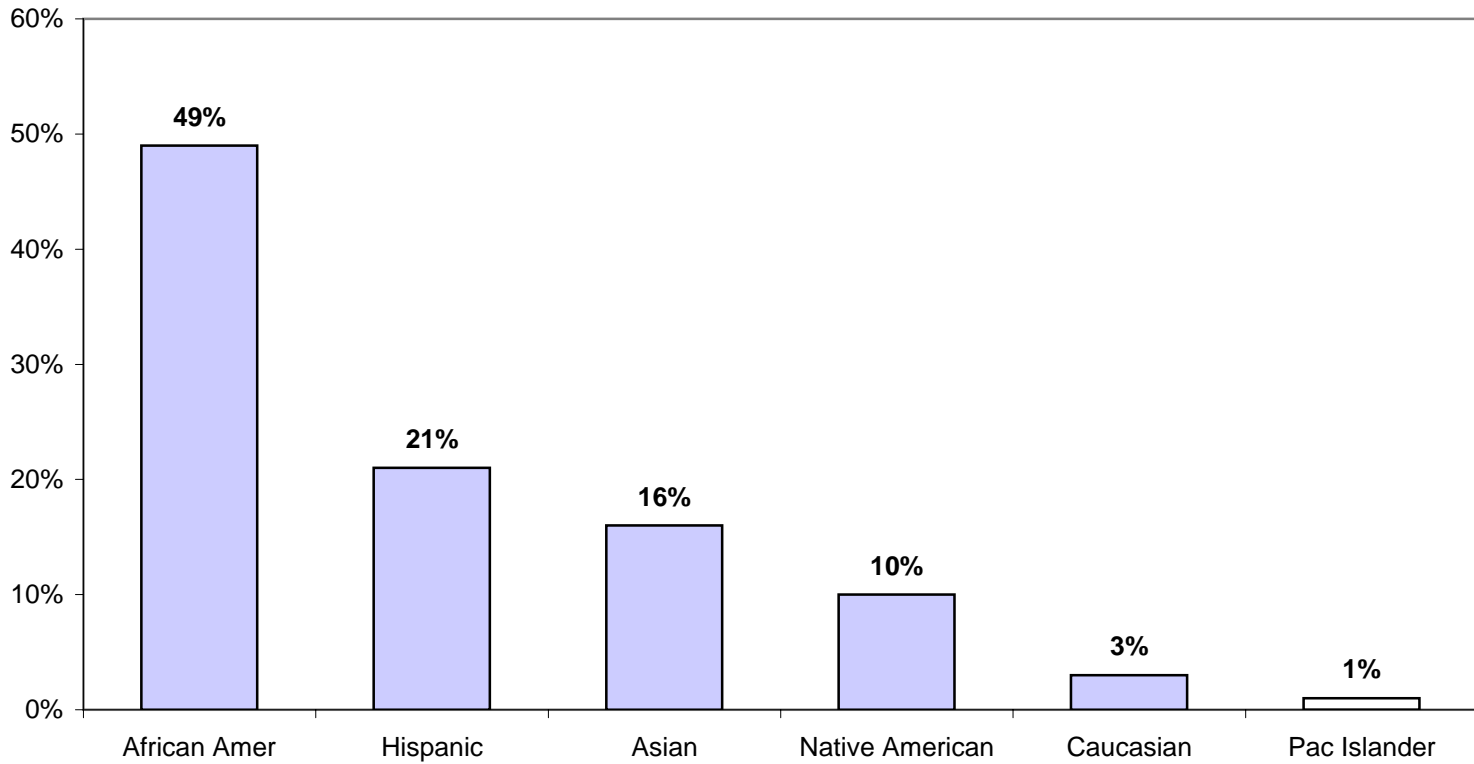
Exhibit 4

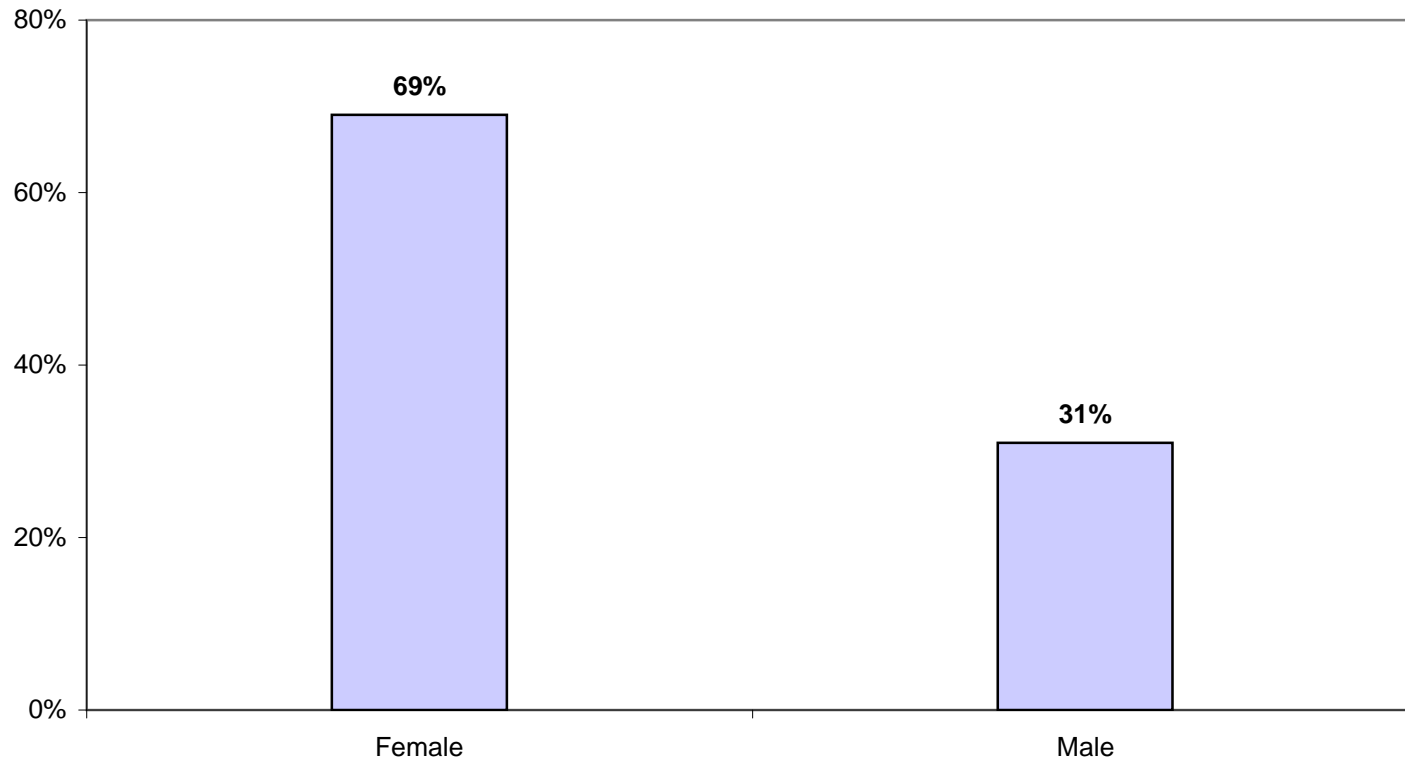Evaluation of the RCMAR Program

Number of New RCMAR Scholars Each Year

Note: A total of 183 new scholars joined RCMAR during FY 1997-2005. 108 joined during RCMAR I and 75 joined during the first 4 years of RCMAR II.
Data source: RCMAR program documents.

Exhibit 5

Evaluation of the RCMAR Program

Race/Ethnicity of RCMAR Scholars

Note: Race/ethnicity of the scholars who joined RCMAR during FY 1997-2005 (N=183). Data sources: RCMAR program documents, center directors, web searches.

Exhibit 6

Evaluation of the RCMAR Program

Gender of RCMAR Scholars

Note: Sex/gender of the scholars who joined RCMAR during FY 1997-2005 (N=183). Data sources: RCMAR program documents, center directors, web searches.

Exhibit 7

Evaluation of the RCMAR Program

RCMAR Scholars' Highest Degree When Entering the Program
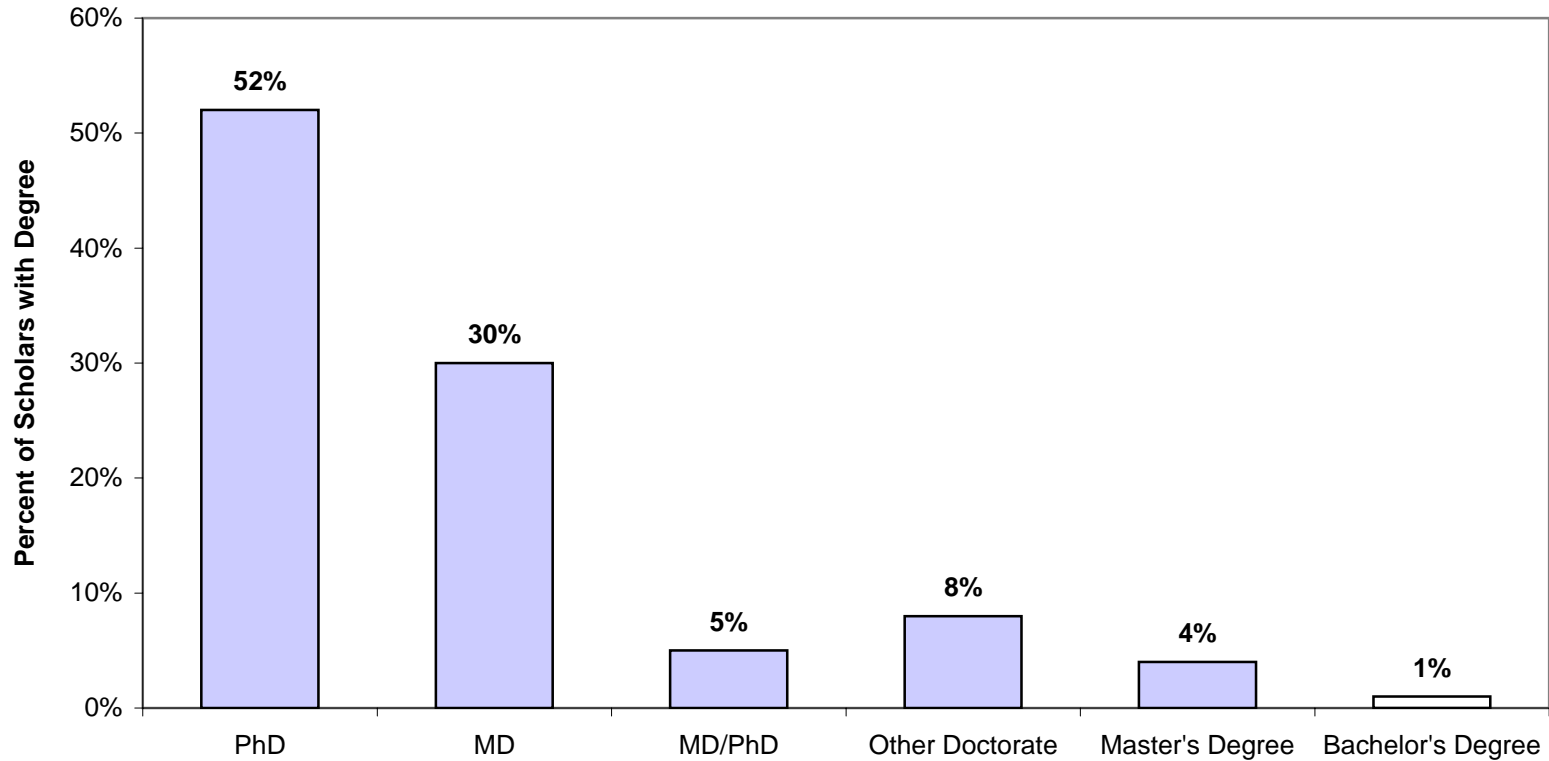
Note: Highest degree of the RCMAR scholars who joined RCMAR during FY 1997-2005 (N=183). The first 2 columns do not include MD/PhD degrees.   Data sources: RCMAR program documents, IMPAC II, web searches.

Exhibit 8

Evaluation of the RCMAR Program

RCMAR Scholars' Academic Position When Entering the Program
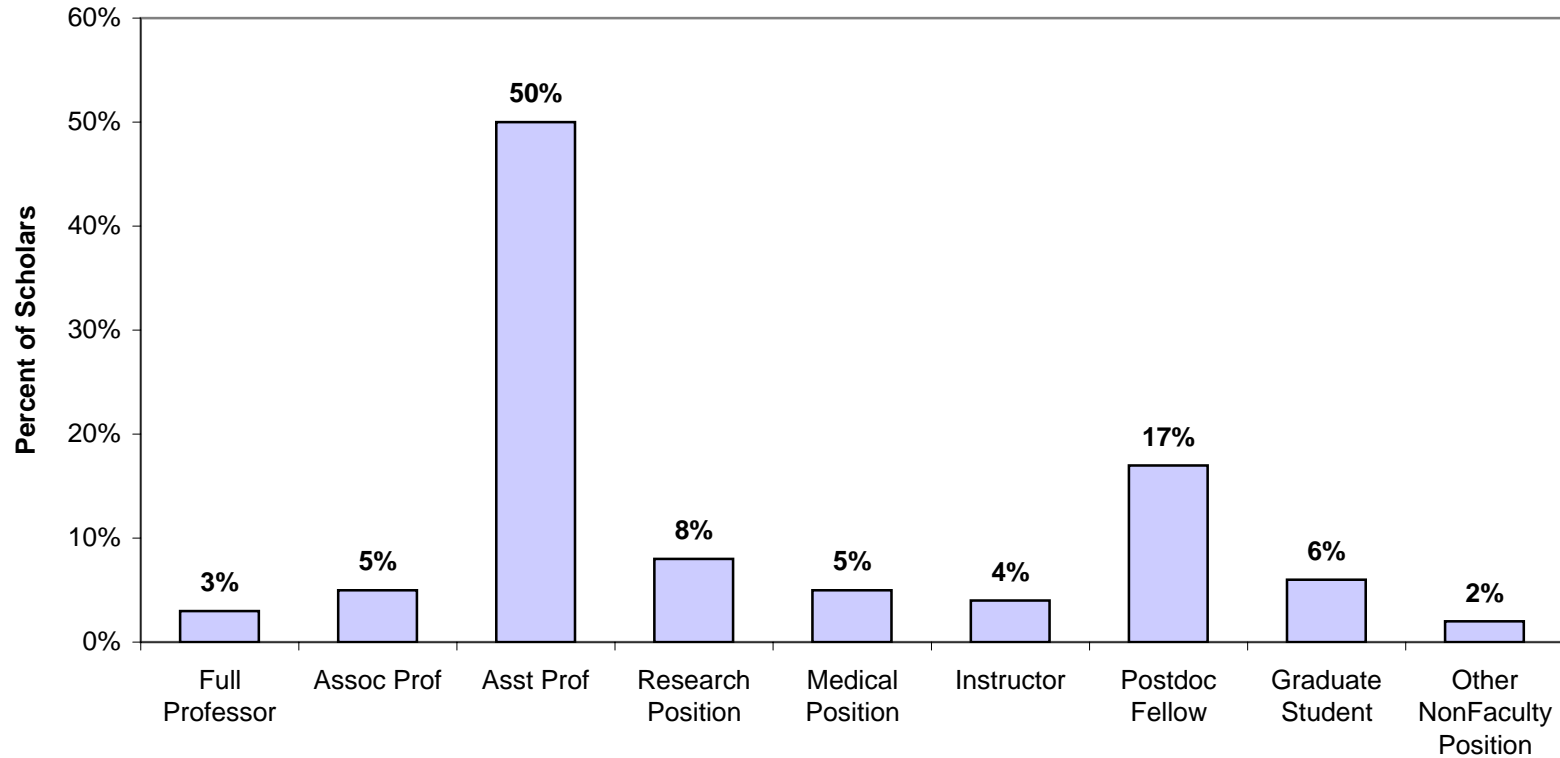
Note: Research Position includes research specialist, research associate, etc. Medical Position includes staff physician, clinical fellow, etc. (N = 183).
Data sources: RCMAR program documents, center directors.

Exhibit 9

Evaluation of the RCMAR Program
Percent of Scholars with Scientific Publications
Before Joining RCMAR
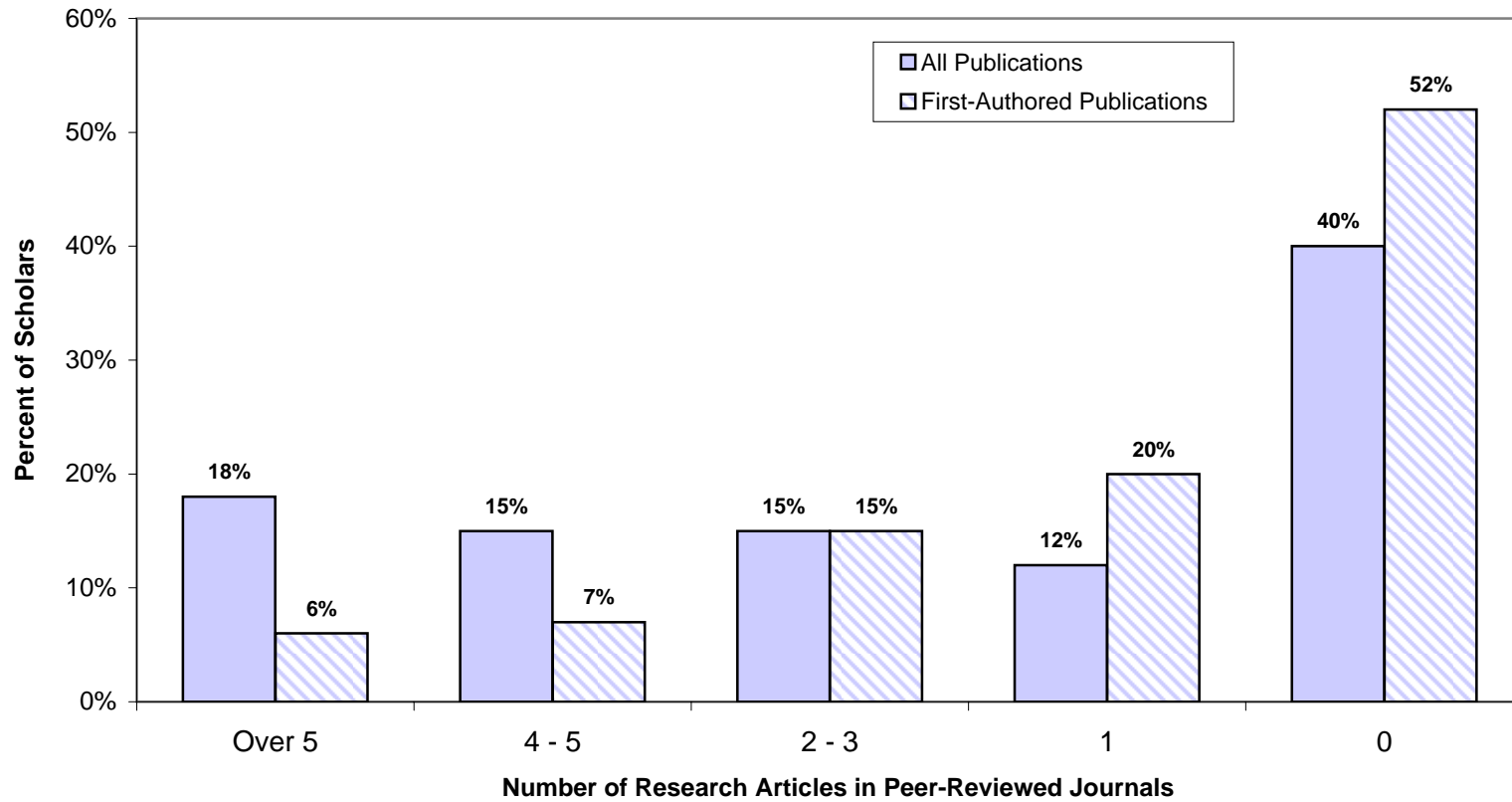
Note: 60% of the 183 RCMAR scholars had published before joining RCMAR (18% had more than 5 articles). 48% had been first authors before joining RCMAR (6% had more than 5 first-authored articles). Data source = PubMed.

Exhibit 10

Evaluation of the RCMAR Program

**Percent of Scholars Who Had Applied For and/or Received
One or More PHS Grants Before Joining RCMAR**
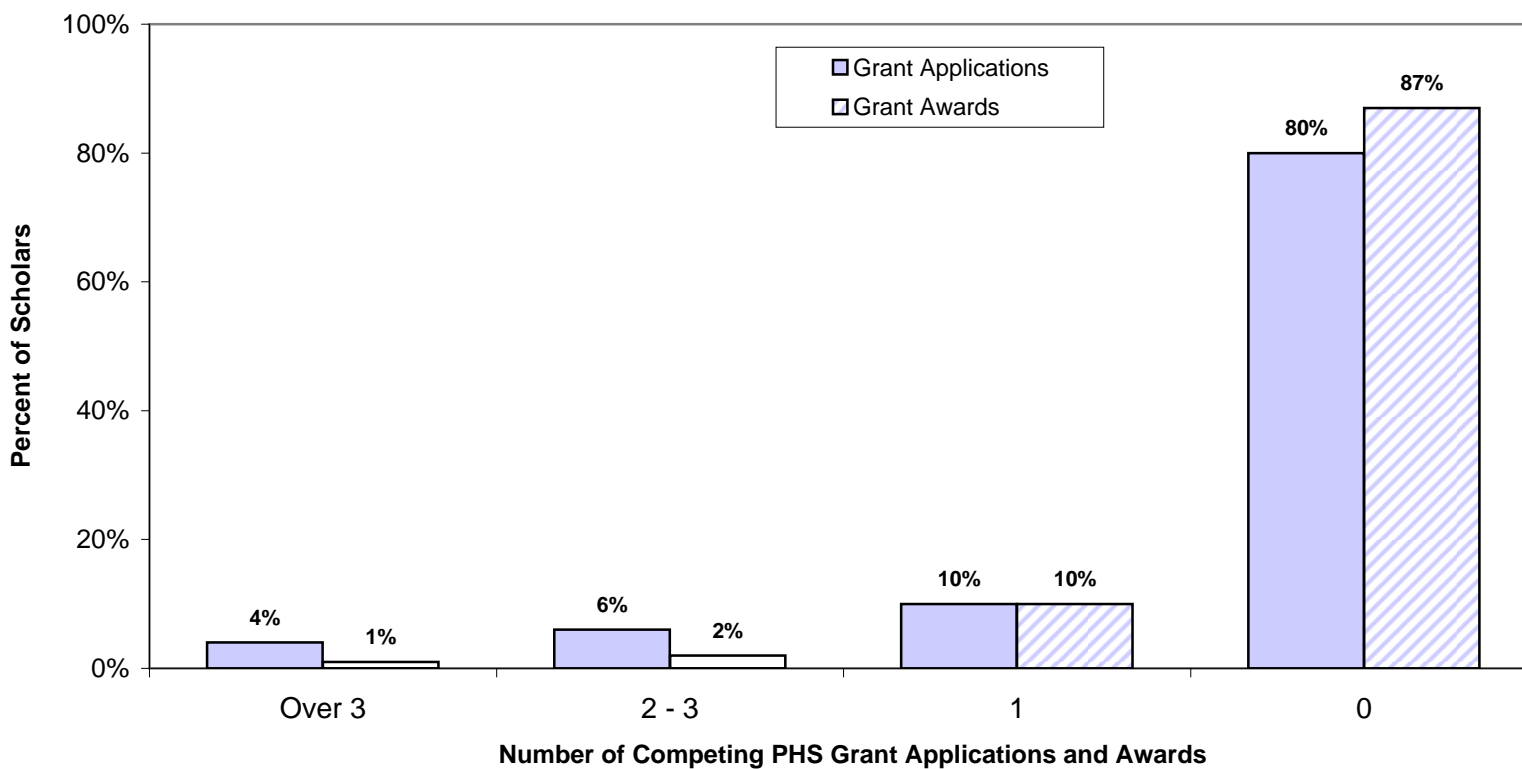
Note: 20% of the 183 scholars had applied for and 13% had received at least one PHS grant before joining RCMAR. Data source: IMPAC II.

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Exhibit 11

Evaluation of the RCMAR Program

**Percent of Scholars with Different Types of PHS Grants
Before Joining RCMAR**
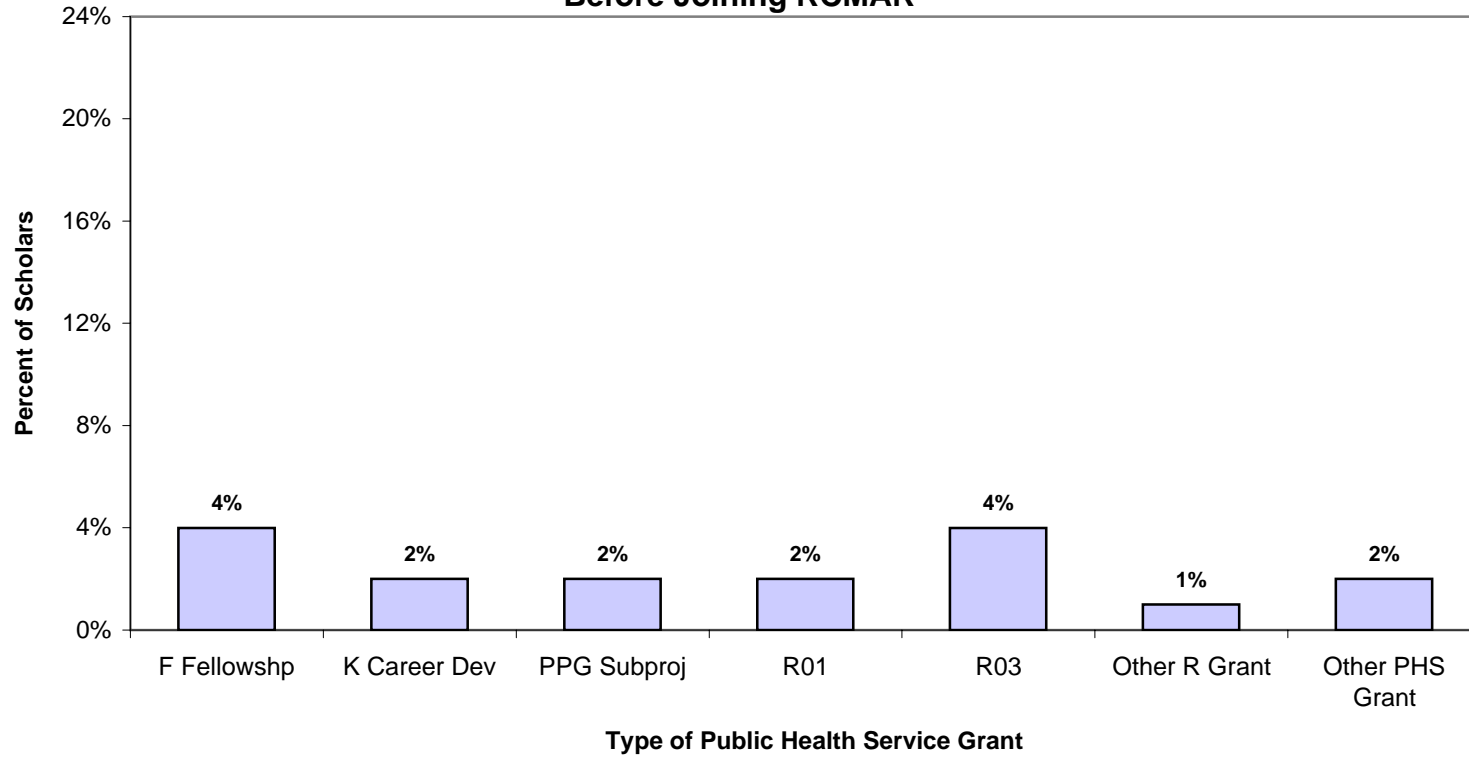
Note: 3% of the 183 scholars had received more than one type of PHS grant before joining RCMAR. Data source: CRISP.

Exhibit 12

Evaluation of the RCMAR Program

Percent of Scholars Pursuing Different Types of Research
Before Joining RCMAR
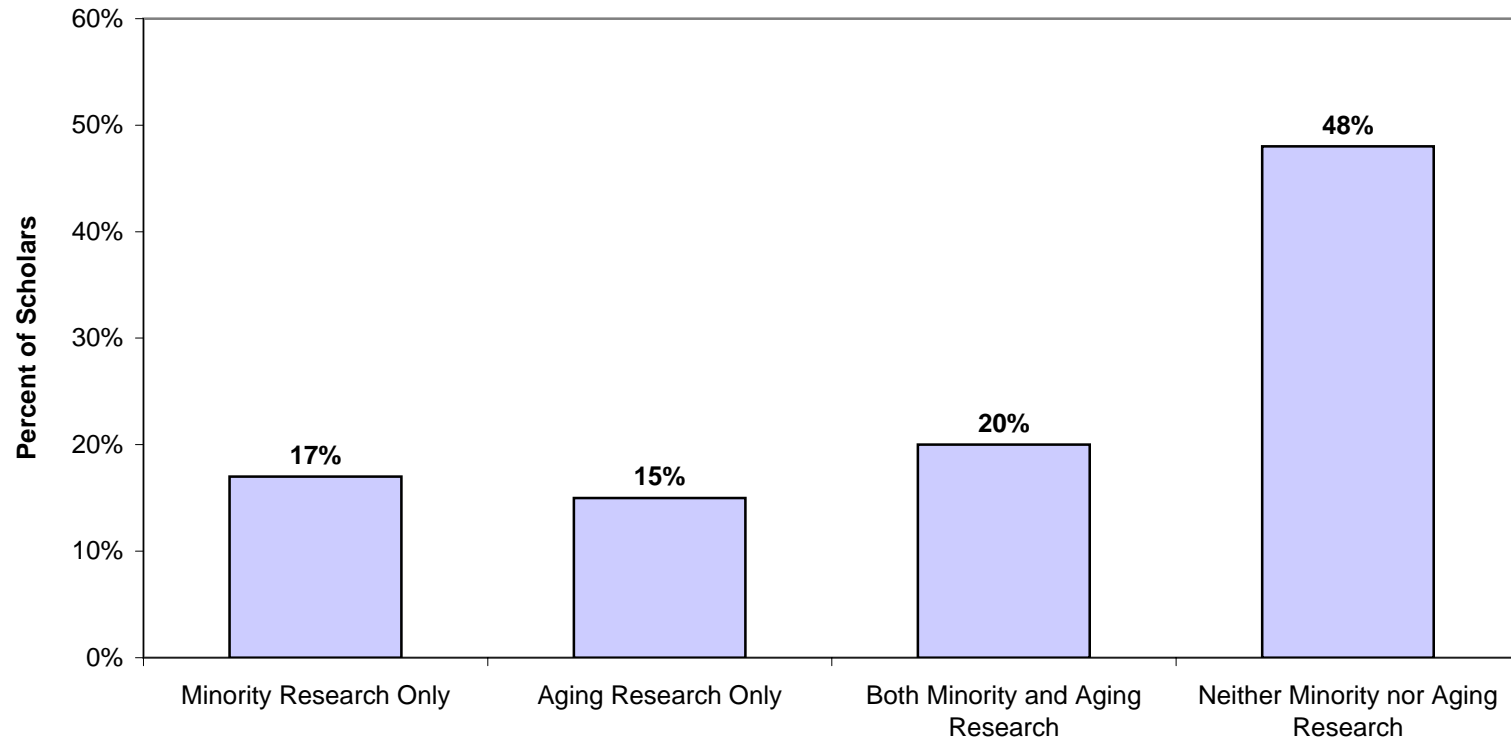
Note: The results are based on an analysis of scholars' publications and PHS grant applications and awards before joining RCMAR (N = 183).
Data sources: PubMed, IMPAC II, RCMAR program documents.

Exhibit 13

Evaluation of the RCMAR Program

Types of Pilot Projects Conducted by RCMAR Scholars
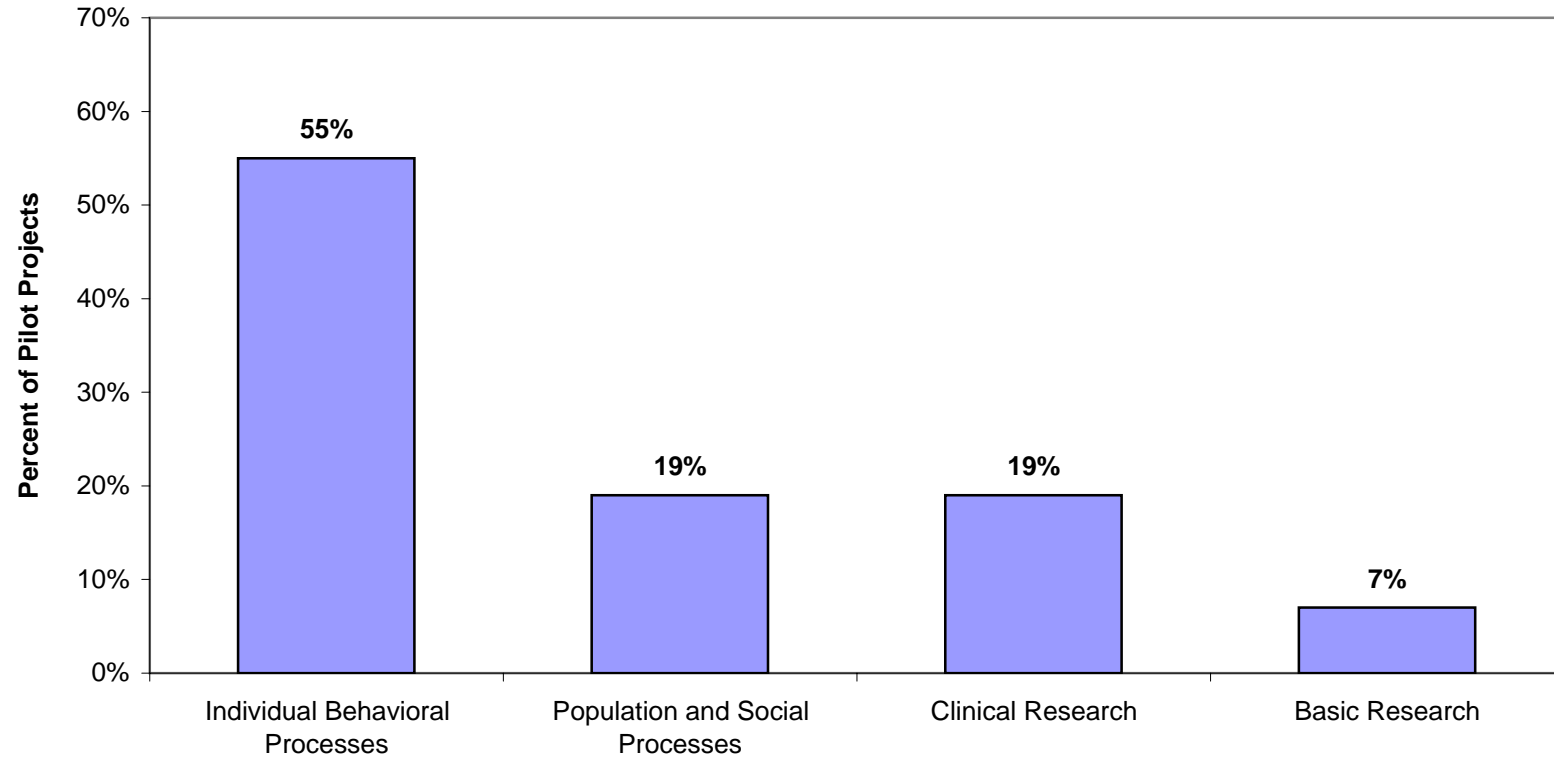
Note: The results are based on an analysis of the 183 scholars' RCMAR pilot projects. The first two categories cover the types of behavioral and social research studies supported by the two branches in NIA's Behavioral and Social Research (BSR) Program. Data source: RCMAR program documents.

Exhibit 14

Evaluation of the RCMAR Program

Race/Ethnicity and Gender of RCMAR Scholars
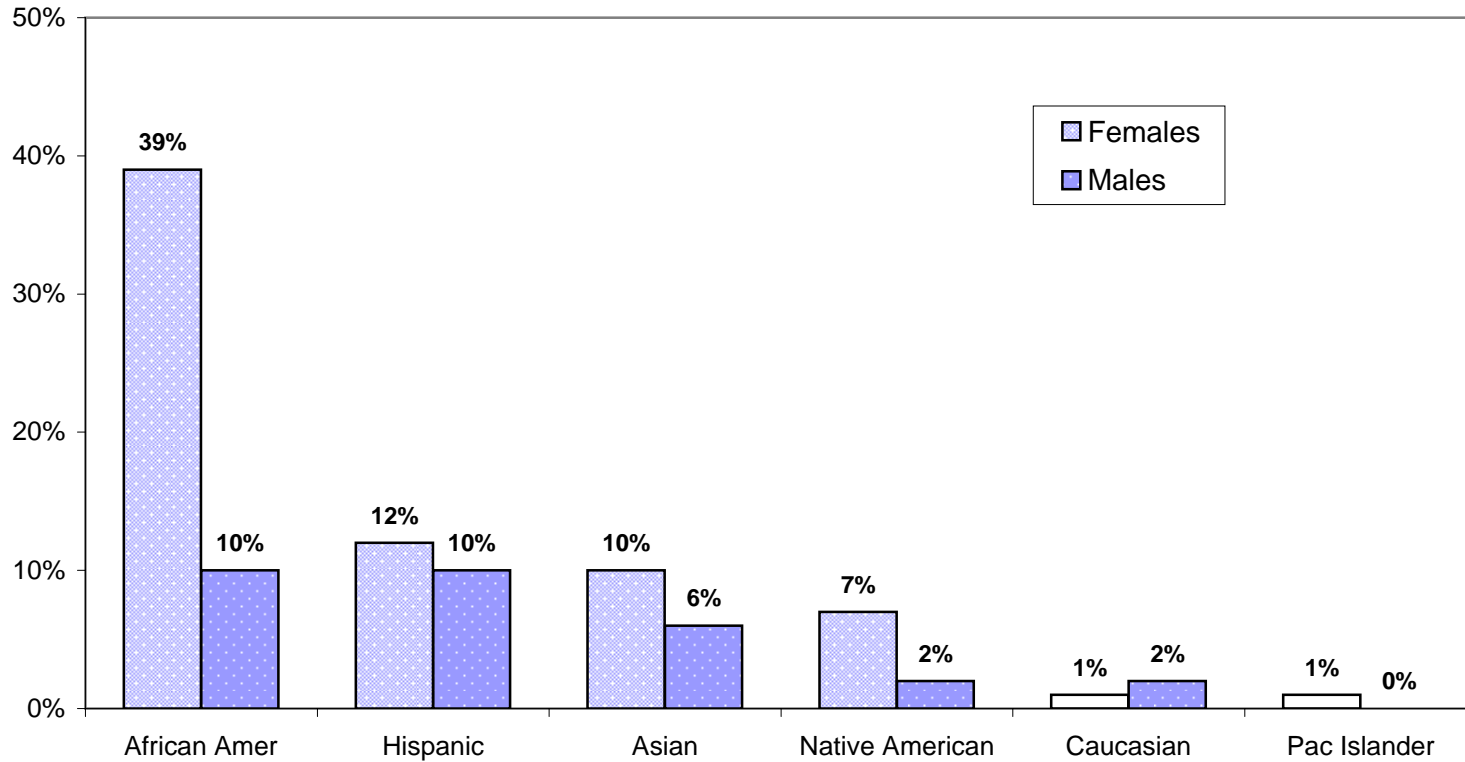
Note: Race/ethnicity and gender of the 183 scholars who joined RCMAR during FY 1997-2005. Data sources: RCMAR program documents, center directors, web searches.

Exhibit 15

Evaluation of the RCMAR Program

Number of New Pilot Projects Each Year
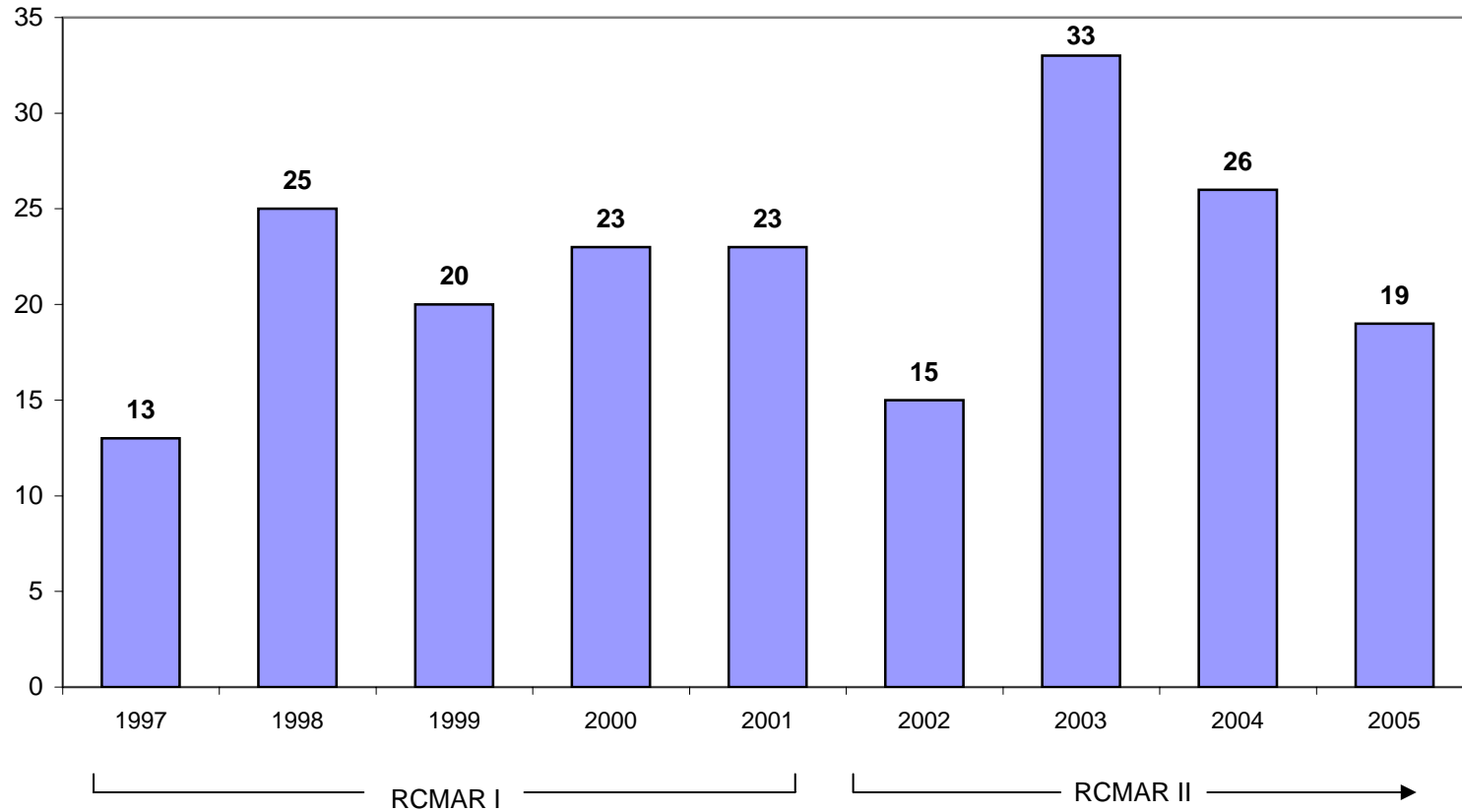
Note: A total of 191 new pilot projects were funded by RCMAR during FY 1997-2005. 99 projects were funded during RCMAR I and 92 during the first four years of RCMAR II. Data source: RCMAR program documents.

Exhibit 16A

Evaluation of the RCMAR Program

**Number of PHS-Funded Investigators and Grants at RCMAR I Institutions
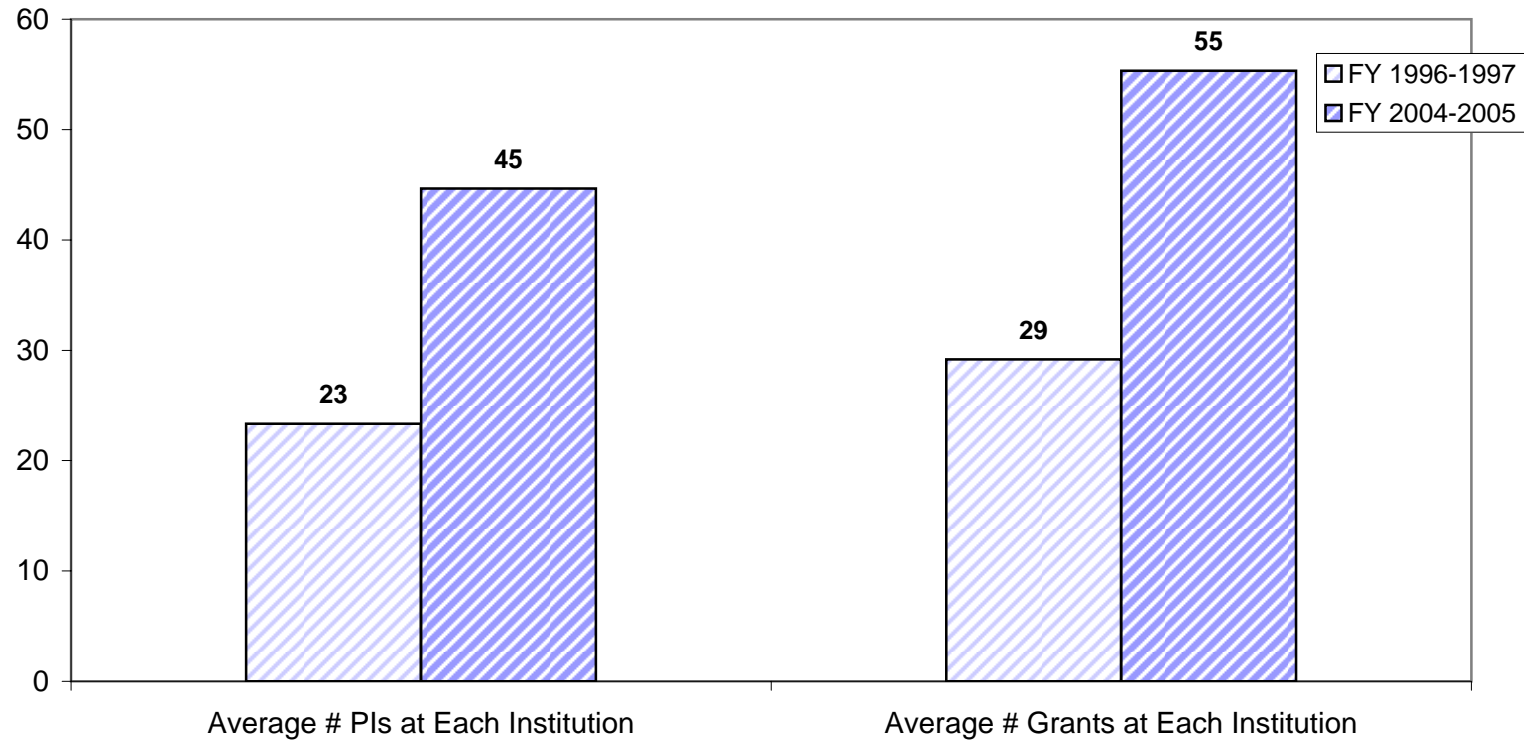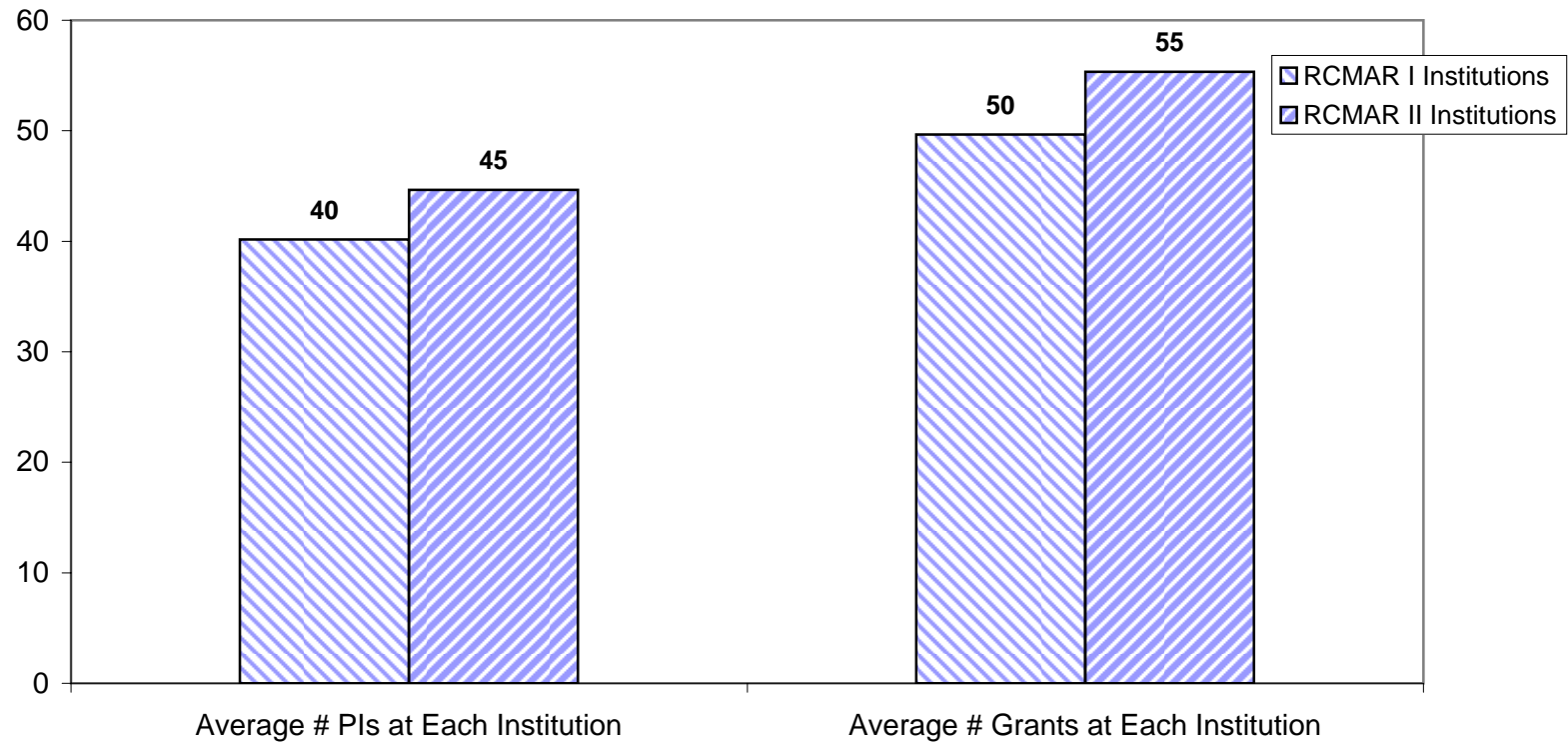Addressing Minority Aging Research**
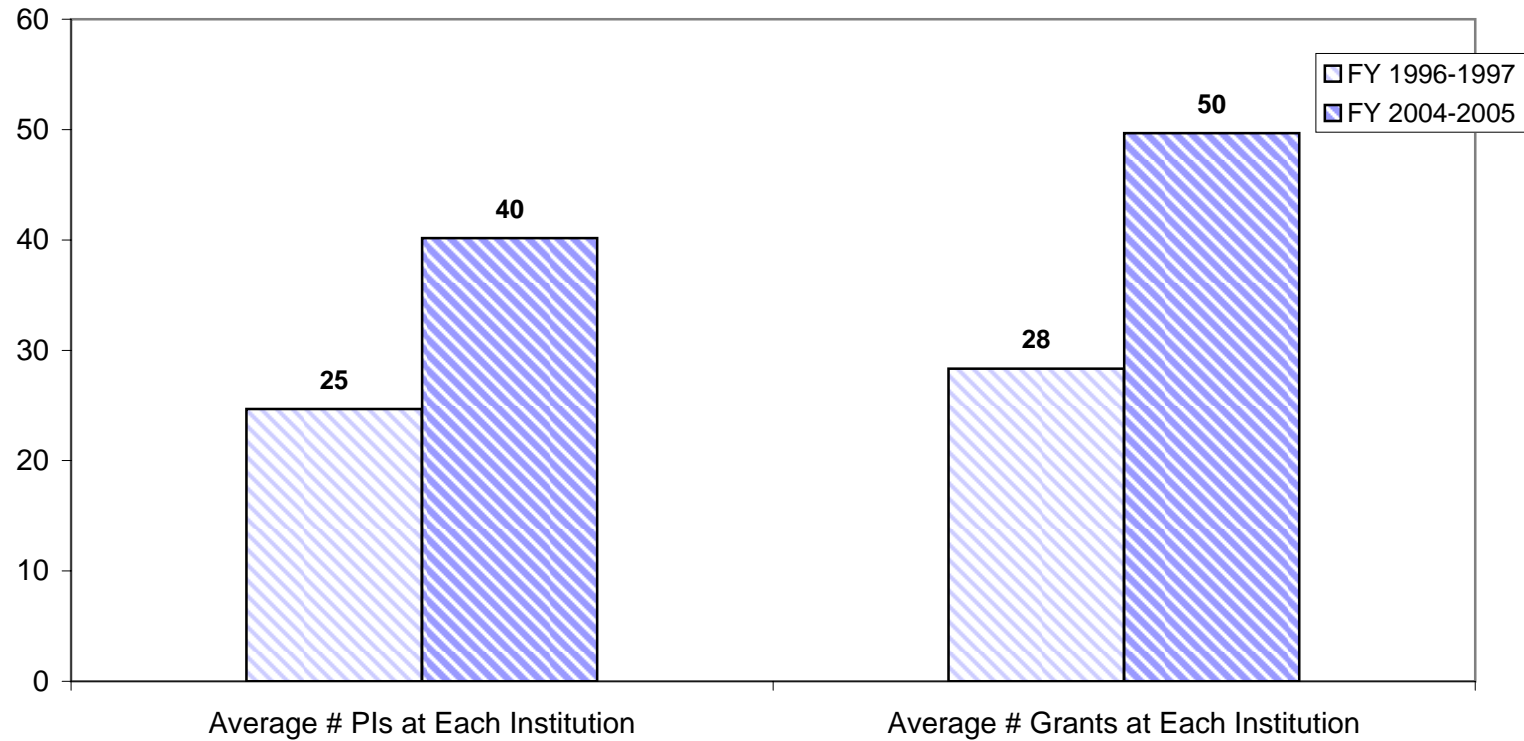
Note: The results are based on an analysis of all competing and noncompeting PHS grants awarded to the 5 RCMAR I lead institutions during FY 1996-1997 and FY 2004-2005 that involved minority aging research. Data source: CRISP.

Exhibit 16B

Evaluation of the RCMAR Program

**Number of PHS-Funded Investigators and Grants at RCMAR II Institutions
Addressing Minority Aging Research**

Note: The results are based on an analysis of all competing and noncompeting PHS grants awarded to the 5 RCMAR II lead institutions during FY 1996-1997 and FY 2004-2005 that involved minority aging research. Data source: CRISP.

Exhibit 16C

Evaluation of the RCMAR Program

**Number of PHS-Funded Investigators and Grants at RCMAR Institutions
Addressing Minority Aging Research in FY 2004-2005**

Note: The results are based on an analysis of all competing and noncompeting PHS grants awarded to the RCMAR lead institutions during FY 2004-2005 that involved minority aging research. Data source: CRISP.

Exhibit 17

Evaluation of the RCMAR Program

Changes Through Time in the Number of PIs Conducting Minority Aging Research
(RCMAR vs. Comparison Group)

|	FY 1996-1997	FY 2004-2005	Difference	% Change[1]
RCMAR I Institutions				
A	14	21	7	50%
B	24	47	23	96%
C	7	8	1	14%
D	47	75	28	60%
E	34	48	14	41%
F	22	42	20	91%
Average - RCMAR	**25**	**40**	**15**	**59%**
Comparison Group				
S	2	2	0	0%
T	14	21	7	50%
U	5	11	6	120%
V	0	1	1	50%
W	1	4	3	300%
X	3	15	12	400%
Average - Comp Group	**4**	**9**	**5**	**153%**

Note:

The 6 institutions that were successful in applying for a RCMAR grant in FY 1997 (the RCMAR I institutions) were compared with the 6 highest scoring institutions who applied at the same time but were not funded. For each institution, the number of principal investigators (PIs) at the institution who had one or more PHS grants in FY 1996-1997 that involved minority aging research was compared with the number of PIs who had one or more grants of this type in FY 2004-2005 (not counting RCMAR PIs). Statistical analyses revealed that the RCMAR institutions as a group had a significantly greater increase in the number of PIs pursuing minority aging research than the comparison group (p = .025, one-tailed t-test for independent samples).

[1] When the divisor was 0, % Change was estimated. Average % Change figures were calculated by averaging the % Change for each institution in the group.

Data Source: CRISP

Exhibit 18

Evaluation of the RCMAR Program

**Changes Through Time in the Number of PHS Grants Involving Minority Aging Research
(RCMAR vs. Comparison Group)**

	FY 1996-1997	FY 2004-2005	Difference	% Change[1]
RCMAR I Institutions				
A	18	25	7	39%
B	29	59	30	103%
C	7	8	1	14%
D	52	93	41	79%
E	39	62	23	59%
F	25	51	26	104%
Average - RCMAR	**28**	**49**	**21**	**66%**
Comparison Group				
S	2	3	1	50%
T	18	23	5	28%
U	5	12	7	140%
V	1	3	2	200%
W	0	5	4	400%
X	4	25	21	525%
Average - Comp Group	**5**	**12**	**7**	**224%**

Note: The 6 institutions that were successful in applying for a RCMAR grant in FY 1997 (the RCMAR I institutions) were compared with the 6 highest scoring institutions who applied at the same time but were not funded. For each institution, the total number of PHS grants in FY 1996-1997 that involved minority aging research was compared with the number of grants of this type in FY 2004-2005 (not counting RCMAR grants). Statistical analyses revealed that the RCMAR institutions as a group had a significantly greater increase in the number of PHS grants involving minority aging research than the comparison group ($p = .033$, one-tailed t-test for independent samples).

[1] When the divisor was 0, % Change was estimated. Average % Change figures were calculated by averaging the % Change for each institution in the group.

Data Source: CRISP

Exhibit 19A

Evaluation of the RCMAR Program
**Percent of Scholars with Scientific Publications
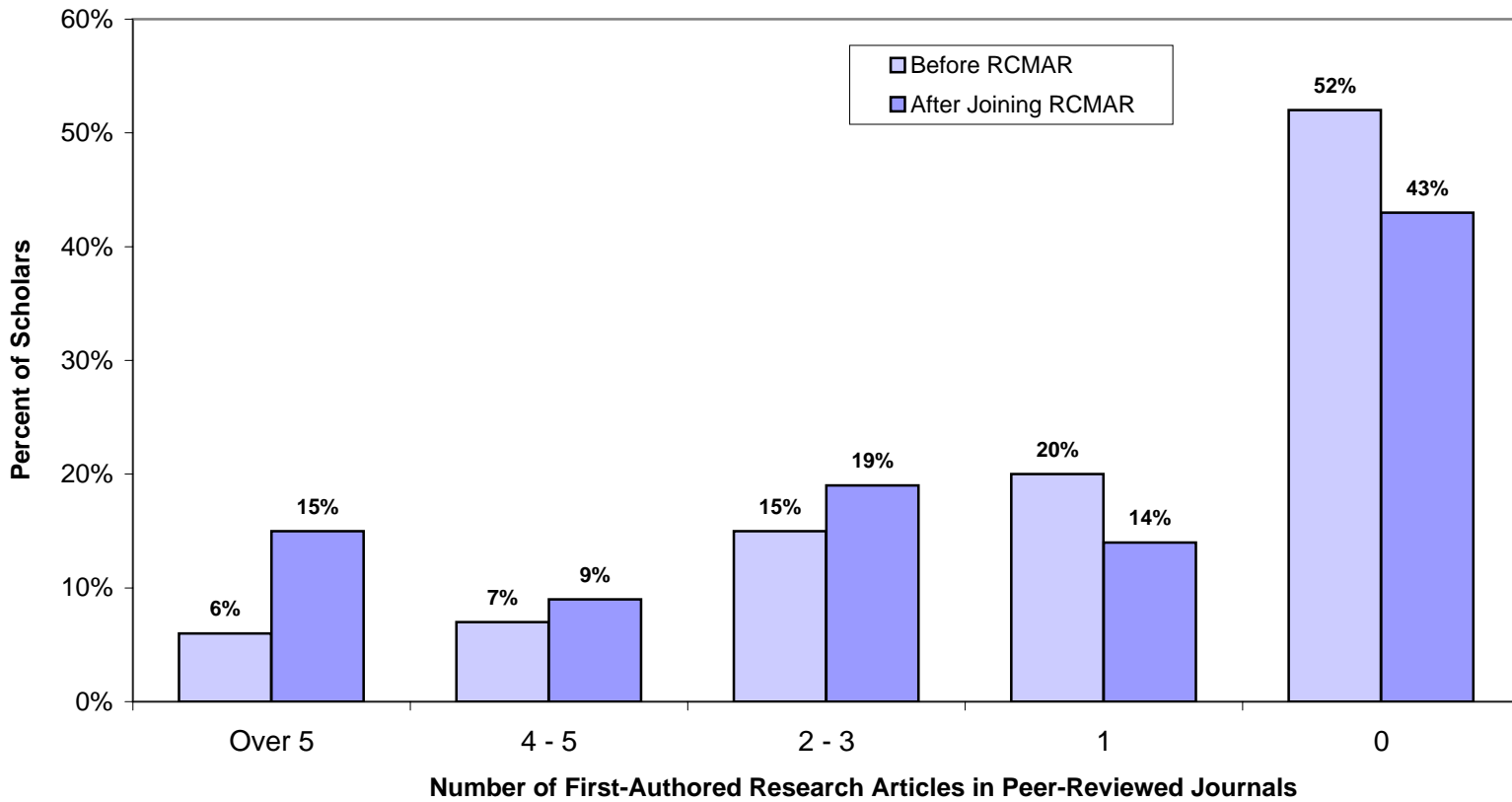Before and After Joining RCMAR**
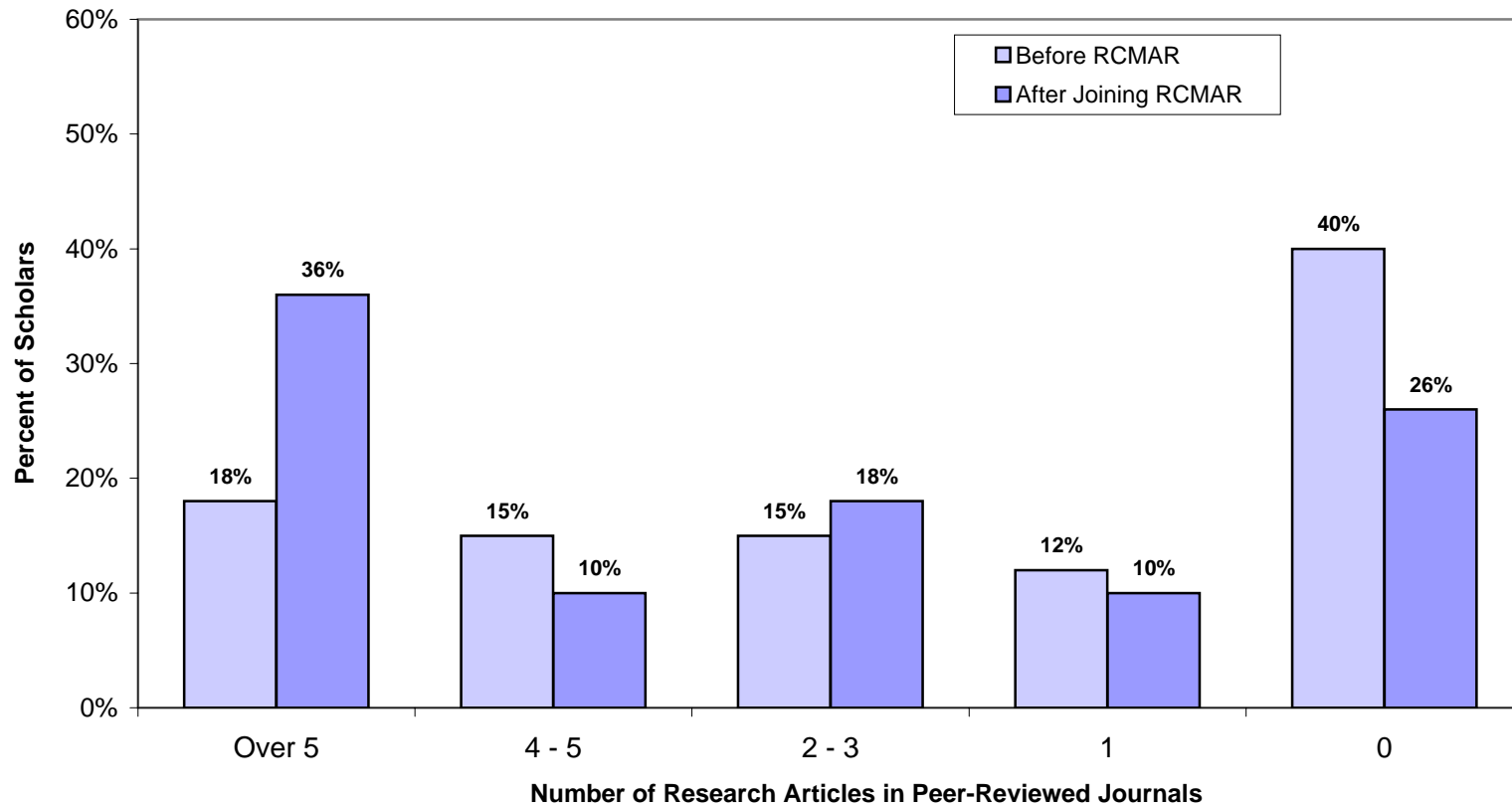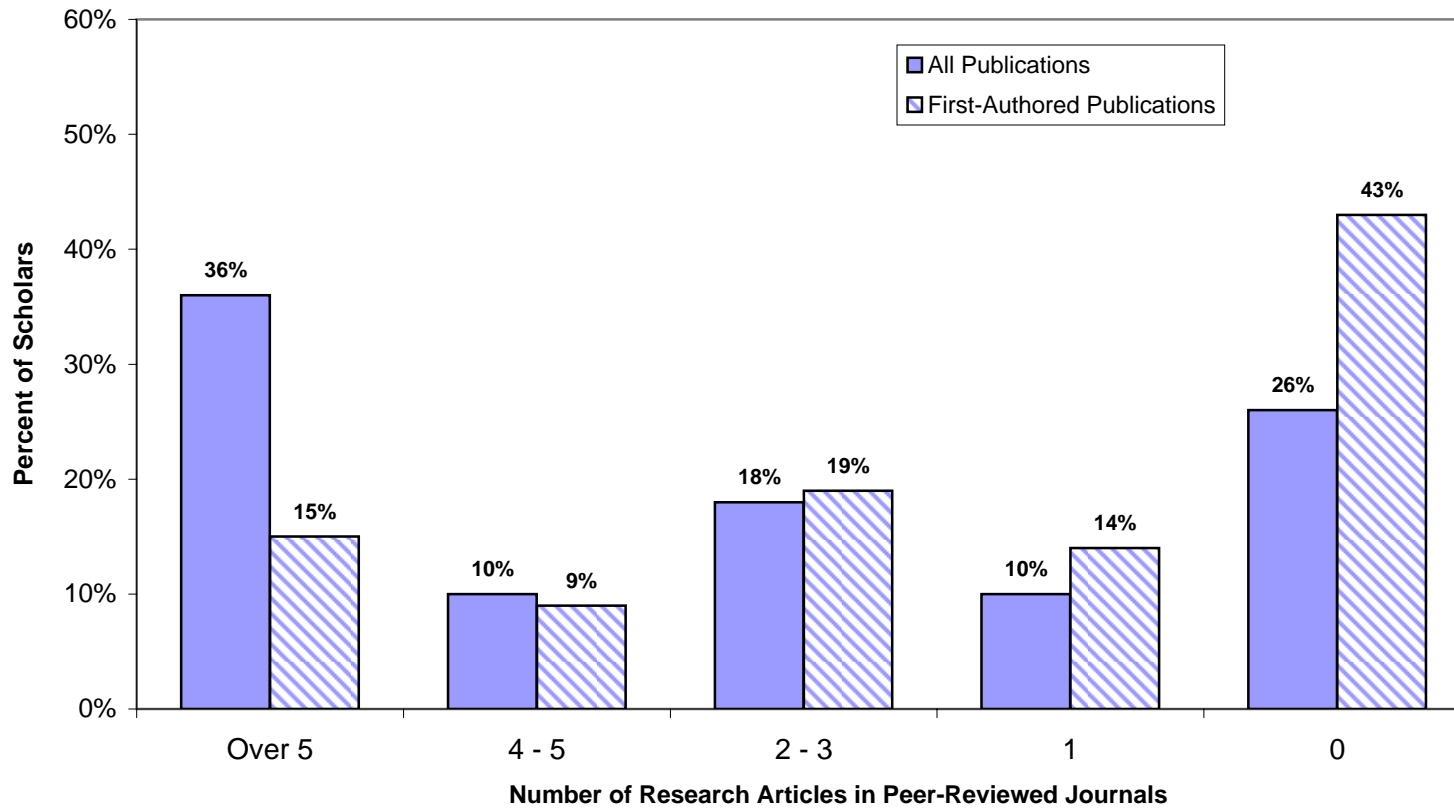

Note: The above table shows the publication pattern of the RCMAR scholars before and after they joined the program through July 2006 (N = 183). Before RCMAR, 60% of the scholars had published at least one article; after joining RCMAR, 74% published at least one new article. Data source: PubMed.

Exhibit 19B

Evaluation of the RCMAR Program
**Percent of Scholars with First-Authored Scientific Publications
Before and After Joining RCMAR**

Note: The above table shows the first-author publication pattern of the RCMAR scholars before and after they joined the program through July 2006 (N = 183). Before RCMAR, 48% of the scholars had published at least one first-authored article; after joining RCMAR, 57% published at least one new first-authored article. Data source: PubMed.

Exhibit 19C

Evaluation of the RCMAR Program
**Percent of Scholars with Scientific Publications
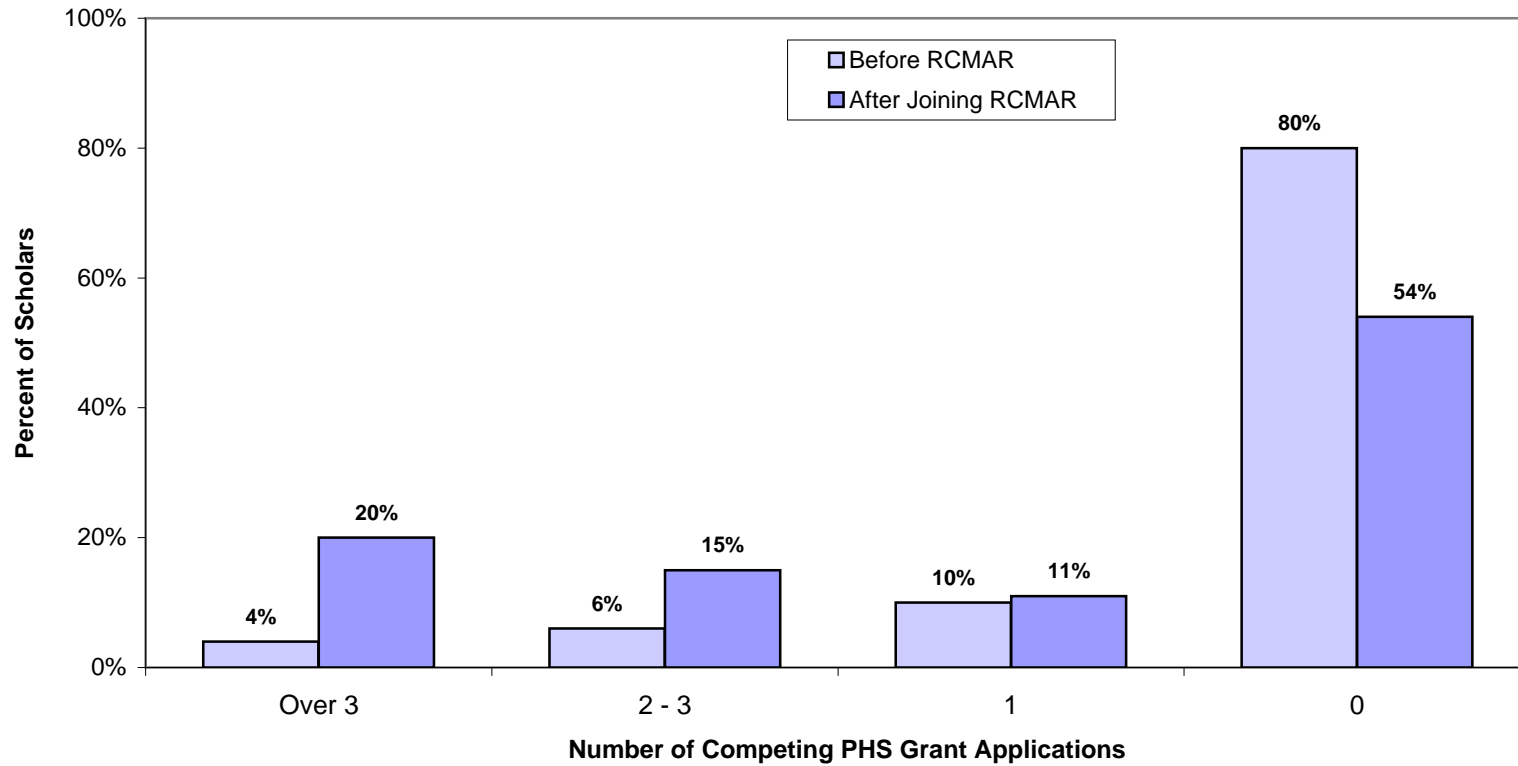After Joining RCMAR**

Note: 74% of RCMAR scholars published after joining RCMAR (18% had more than 5 articles). 57% published as first authors after joining RCMAR (14% had more than 5 new first-authored articles by July 2006). 76% of the RCMAR I scholars (FY 1997-2001) published at least one new article by July 2006. Data source: PubMed.

Exhibit 20A

Evaluation of the RCMAR Program

**Percent of Scholars Who Applied For One or More PHS Grants
Before and After Joining RCMAR**

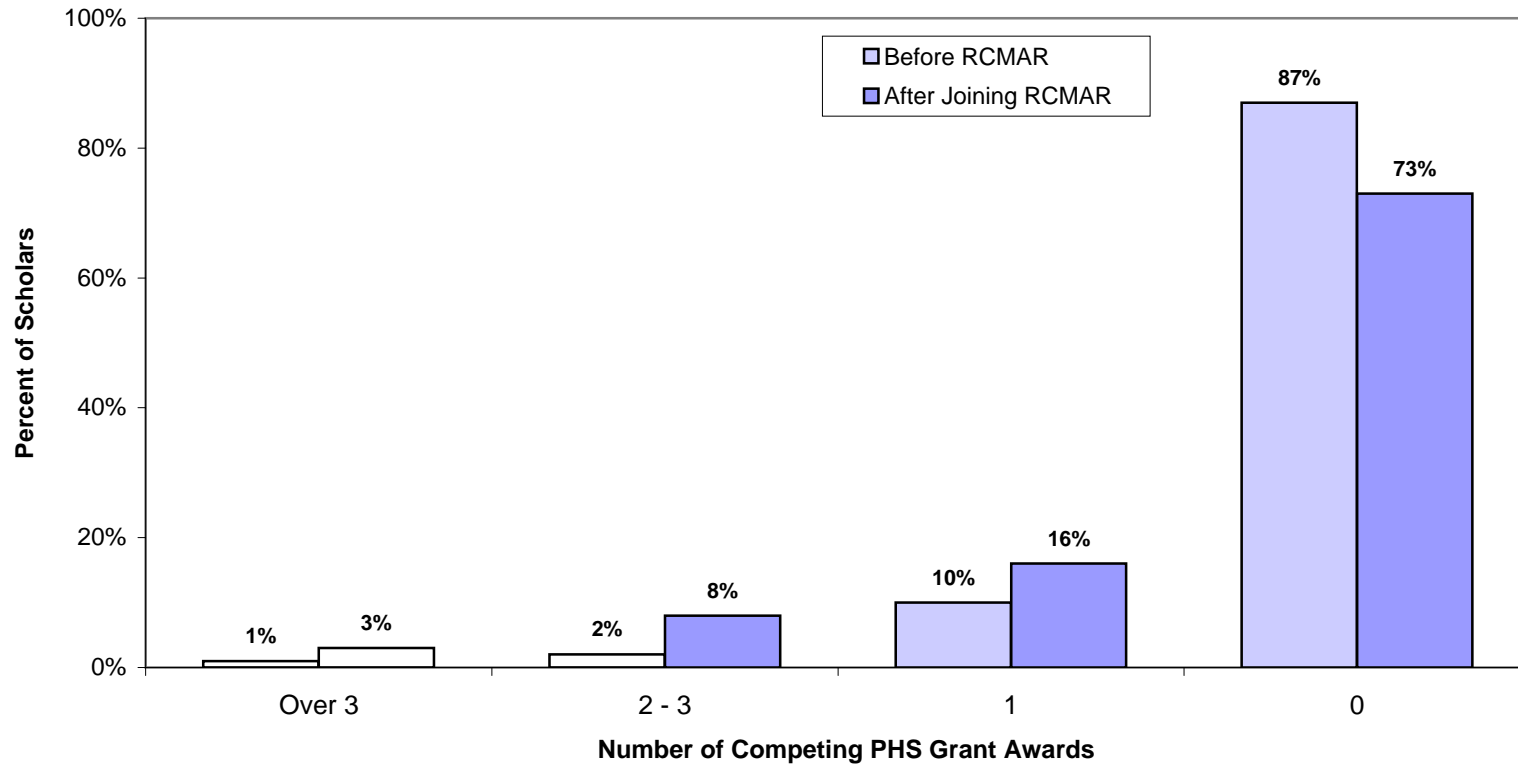**Number of Competing PHS Grant Applications**

Note: The above table shows the PHS grant application pattern of the RCMAR scholars before and after they joined the program through July 2006 (N = 183). Before RCMAR, 20% of the scholars had applied for at least one competitive grant; after joining RCMAR, 46% applied for at least one new grant.

Data Sources: IMPAC II, RCMAR program documents
Draft 9-26-06

Exhibit 20B

Evaluation of the RCMAR Program

**Percent of Scholars Who Received One or More PHS Grants
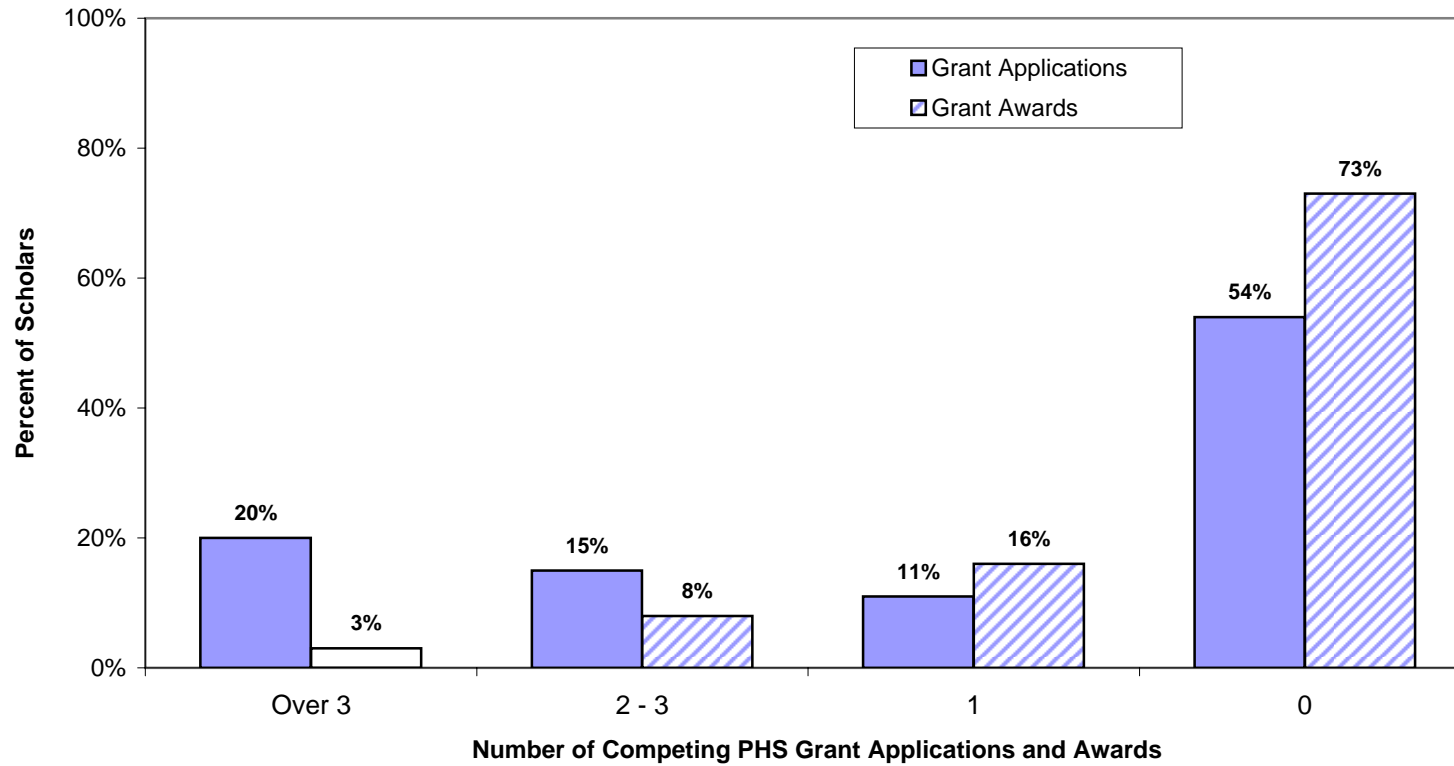Before and After Joining RCMAR**

Note: The above table shows the PHS grant application pattern of the RCMAR scholars before and after they joined the program through July 2006 (N = 183).   Before RCMAR, 13% of the scholars had received at least one competitive grant; after joining RCMAR, 27% received at least one new grant. Data sources: IMPAC II, RCMAR program documents.

Exhibit 20C

Evaluation of the RCMAR Program

Percent of Scholars Who Applied For and/or Received
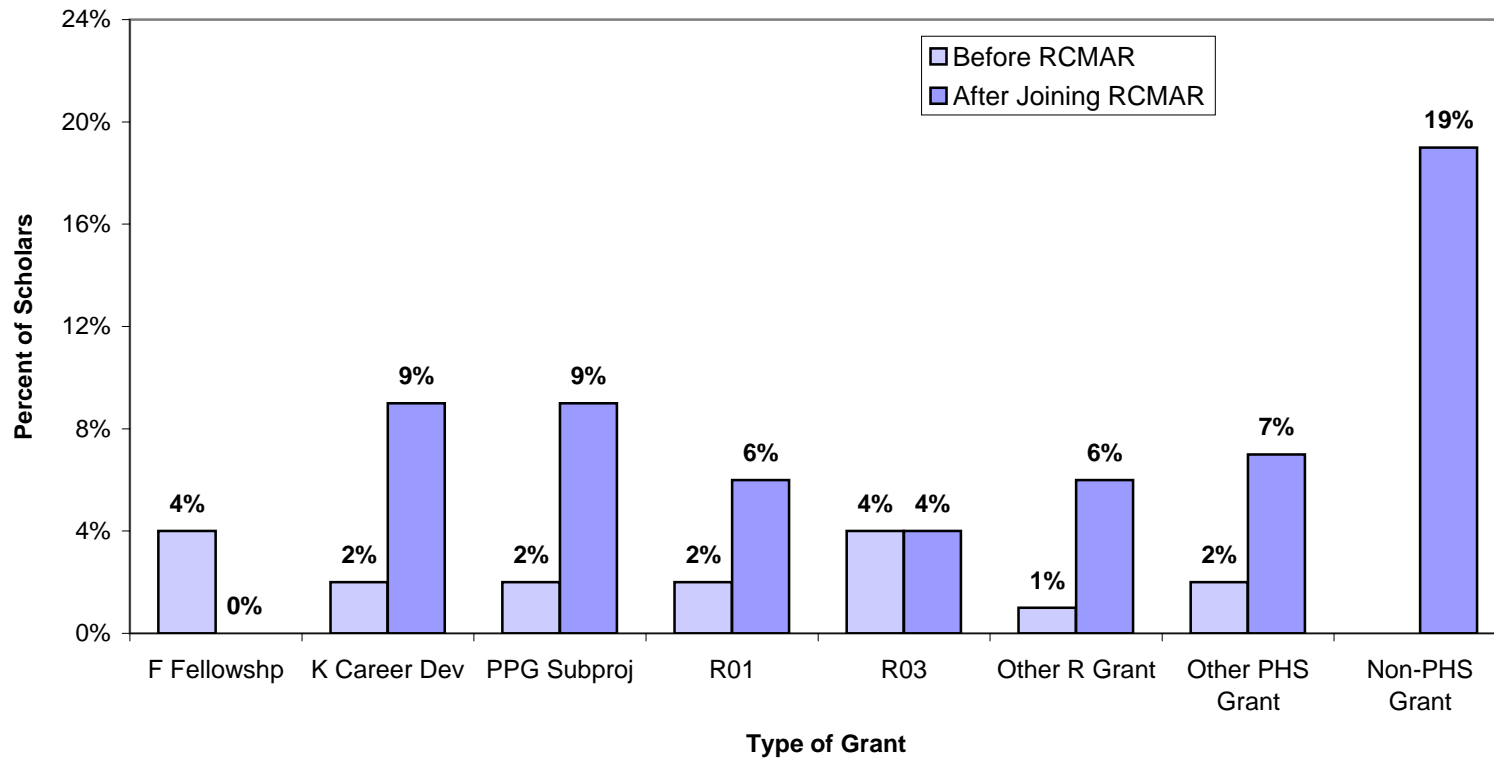## One or More PHS Grants After Joining RCMAR

Note: 46% of all RCMAR scholars applied for and 27% received at least one PHS grant after joining RCMAR. Of the RCMAR I scholars (FY 1997-2001), 49% applied for and 33% received at least one new PHS grant as of July 2006. Data sources: IMPAC II, RCMAR program documents.

Exhibit 21

Evaluation of the RCMAR Program

**Percent of Scholars with Different Types of Grants
Before and After Joining RCMAR**

Note: The above table shows the types of grants the RCMAR scholars received before and after they joined the program through July 2006 (N = 183).   Before RCMAR, 13% of the scholars had received at least one PHS grant; after joining RCMAR, 28% received at least one competitive PHS grant. Information was not available to determine the percent of scholars who had non-PHS grants prior to RCMAR. Data sources: CRISP, RCMAR program documents.

Exhibit 22

Evaluation of the RCMAR

**RCMAR Scholars' Most Recent Academic Position
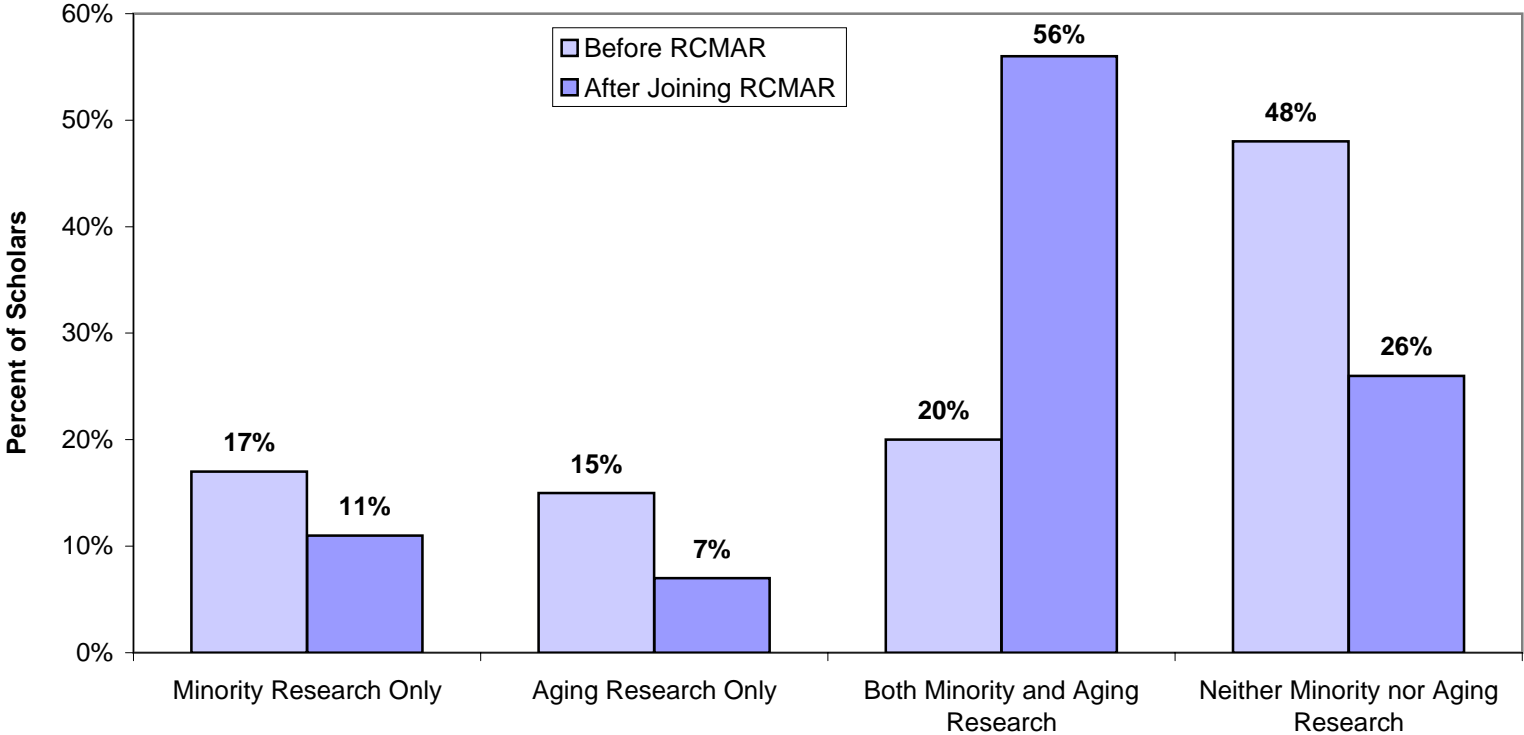Before and After Joining RCMAR**
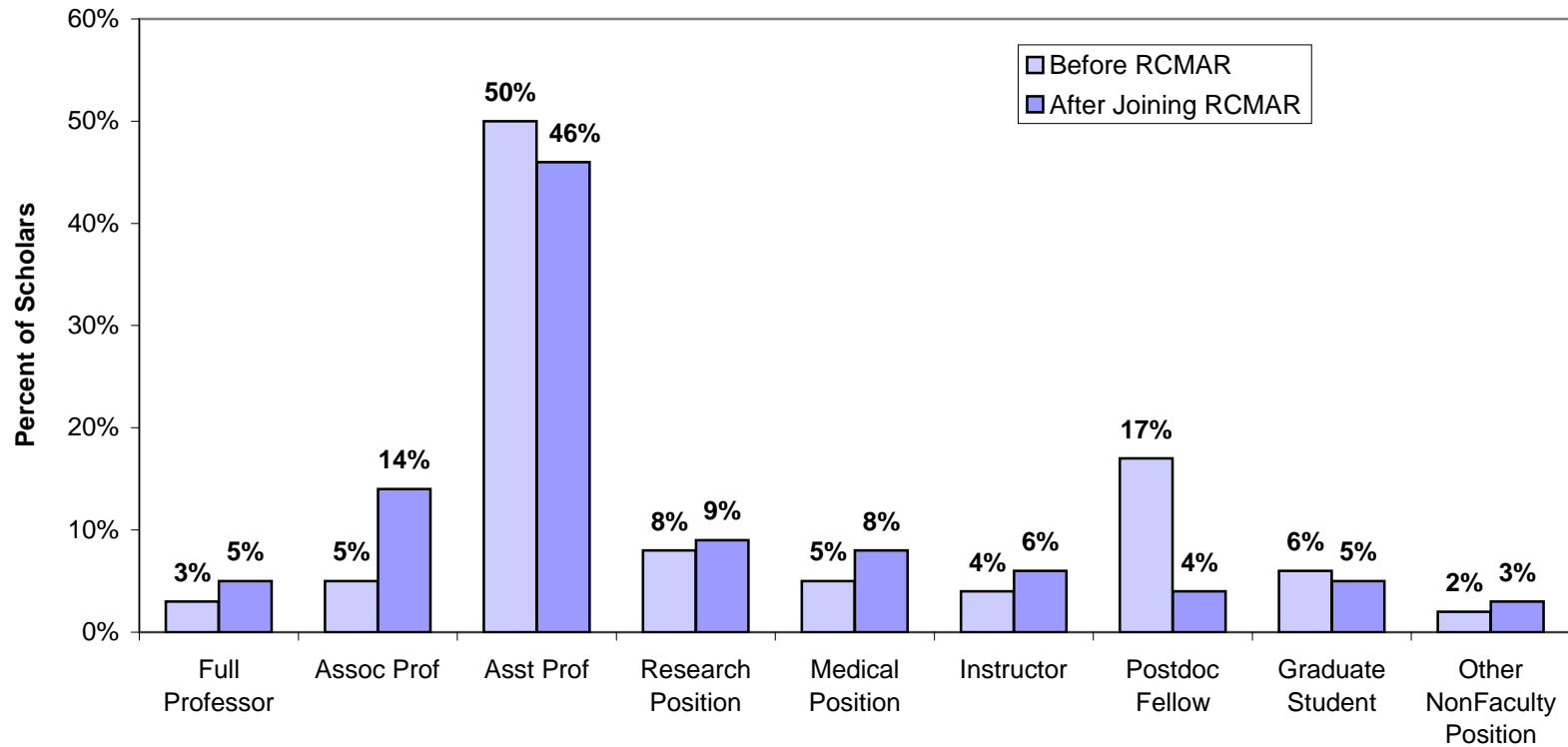
Note: Research Position includes research specialist, research associate, etc. Medical Position includes staff physician, clinical fellow, etc.
Data sources: RCMAR program documents, center directors, IMPAC II, web searches.

Exhibit 23

Evaluation of the RCMAR Program

**Percent of Scholars Pursuing Different Types of Research
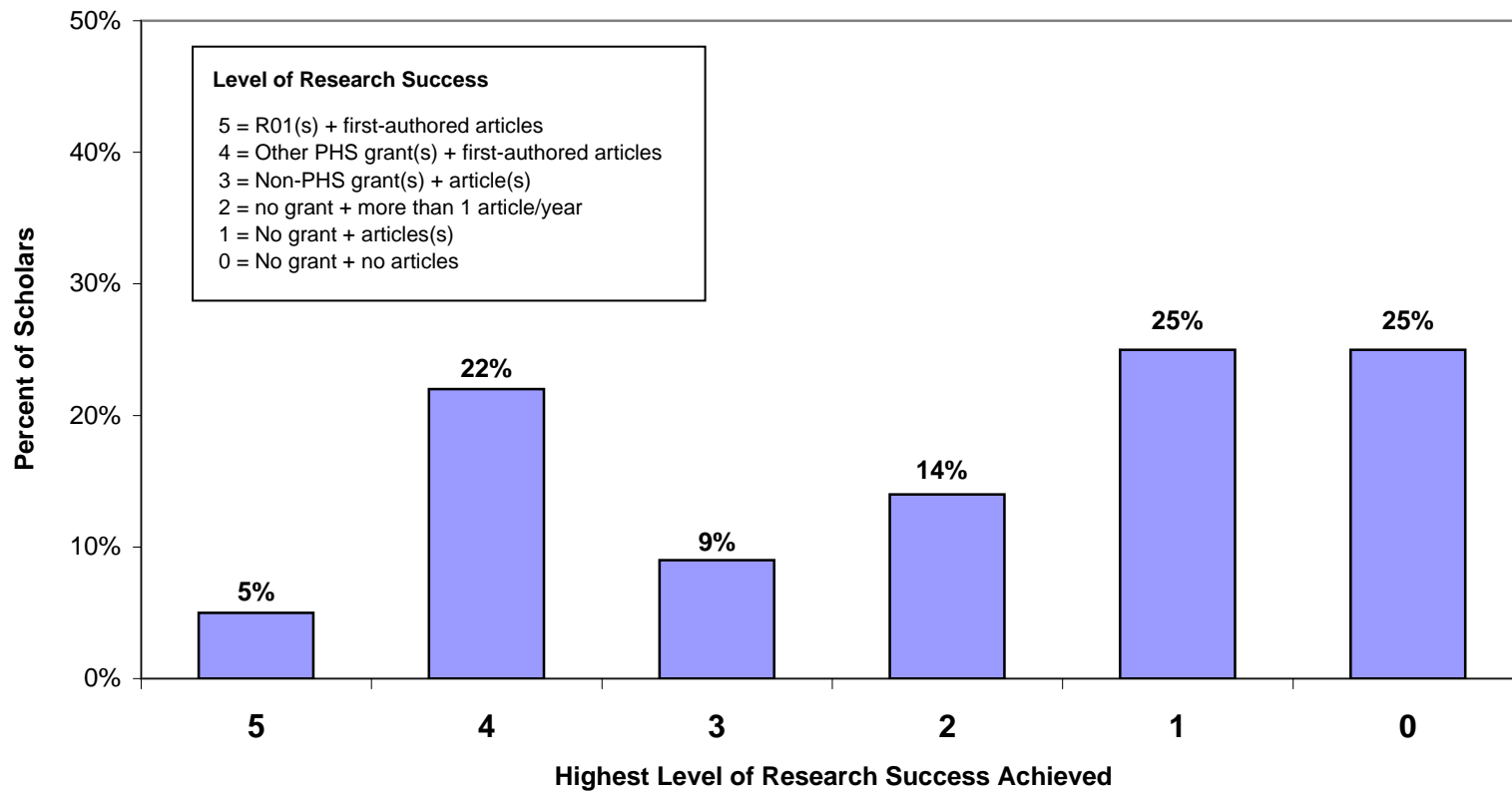Before and After Joining RCMAR**

Note: The results are based on an analysis of scholars' publications, PHS grant applications and awards, and other grants received before and after they joined the RCMAR program. Data sources: PubMed, IMPAC II, RCMAR program documents.

Exhibit 24

Evaluation of the RCMAR Program

**Percent of Scholars Achieving Different Levels of Research Success
After Joining RCMAR**

Note: Each scholar was given only one rating based on an analysis of the scholar's peer-reviewed publications, PHS grants, and other grants received after joining RCMAR through July 2006. The percentages in this exhibit total 100%. Data sources: PubMed, IMPAC II, RCMAR program documents.

Appendix A

PHS Research Center Programs for Reducing Health Disparities

Since 1993 NIA has played a leading role in developing research center programs addressing health disparity issues and the underrepresentation of minority scholars in biomedical and behavioral research. The following is a listing of research center programs of this type that have been sponsored by NIA and by other NIH institutes and centers (ICs) and agencies of the Public Health Service.

NIA Programs

- Exploratory Centers for Research on Health Promotion in Older Minority Populations – P20 program initiated in FY 1993 to support research environments in which minority and non-minority junior and senior investigators collaborate to develop research focused on health and aging in ethnic minority populations.

- Roybal Centers for Translational Research on Aging – P30 grant program initiated by NIA in FY 1993 to move promising social and behavioral basic research findings out of the laboratory and into programs, practices and policies to improve the lives of older people and the capacity of society to adapt to societal aging.

- NIA Demography Centers – P30 program initiated in FY 1994 to provide research on health, economics, and aging, and to make more effective use of data from several national surveys of health, retirement, and long-term care.

- Study of Women's Health Across the Nation (SWAN) – a prospective longitudinal multicenter study involving over 3,300 women that was initiated by NIA in FY 1995 to better understand the natural history of menopause and the decline in ovarian function in minority and majority women (co-sponsored by NINR and ORWH).

- Claude D. Pepper Older Americans Independence Centers (OAICs) – P30/P60 program initiated by NIA in FY 1996 to conduct research aimed at increasing the independence of older Americans.

- Resource Centers for Minority Aging Research (RCMAR) – P30 program initiated by NIA in FY 1997 to increase diversity in the professional workforce pursuing research on minority aging and improve the health and well-being of older minority populations (co-sponsored by NINR and NCMHD).

- Alzheimer's Disease Research Centers (ADRC) – P50 program initiated by NIA in FY 1999 that supports Satellite Diagnostic and Treatment Clinics (SDTCs) charged with recruiting minority, rural, and other underserved populations for neuroscience and neuropsychological research studies.

Programs Sponsored by Other ICs and PHS Agencies

- Research Centers in Minority Institutions (RCMI) – G12 program initiated by NCRR in FY 1985 to enable doctoral-granting academic institutions with predominantly minority student enrollments to become more competitive in obtaining support for the conduct of biomedical and behavioral research.

- Centers for Research to Reduce Oral Health Disparities – U54 program initiated by NIDCR in FY 1999, with an emphasis on pilot projects and mentoring investigators from underrepresented groups.

- Excellence Centers to Eliminate Ethnic/Racial Disparities (EXCEED) – initiated by AHRQ in FY 2000 (co-sponsored by NCMHD, NCI, NIGMS, and HRSA), with an emphasis on pilot projects, mentoring minority investigators, and community partnerships.

- Native American Research Centers for Health (NARCH) – initiated by NIGMS in FY 2000 (co-sponsored by the Indian Health Service), with an emphasis on pilot projects, mentoring Native American investigators, and partnerships with tribally-based organizations.

- Nursing Partnership Centers on Health Disparities – P30 program initiated by NINR in FY 2001 (co-sponsored by NCMHD), with an emphasis on pilot projects, mentoring minority investigators, community partnerships, and recruitment/retention strategies.

- Centers for Population Health and Health Disparities (CPHHD) – P50 program initiated by NIEHS in FY 2002 (co-sponsored by NCI, NIA, and OBSSR), with an emphasis on pilot projects, community partnerships, recruitment/retention strategies, and measurement/methodological studies.

- Centers of Excellence in Partnerships for Community Outreach, Research on Health Disparities and Training (Project EXPORT) – P20, P60, and R24 grant program initiated by NCMHD in FY 2002, with an emphasis on pilot projects, mentoring junior faculty at minority-serving institutions, community partnerships, and measurement/methodological studies.

- Centers for Reducing Asthma Disparities – U01 program initiated by NHLBI in FY 2002, with an emphasis on mentoring researchers at minority-serving institutions, and measurement/methodological studies.

- Comprehensive Centers on Health Disparities (CCHD) at RCMI-Eligible Institutions – U54 program initiated by NCRR in FY 2003 (co-sponsored by NIMH), with an emphasis on pilot projects, mentoring junior investigators, and community partnerships.

- Advanced Centers for Mental Health Disparities Research (ACMHDR) – P50 program initiated by NIMH in FY 2004, with an emphasis on pilot projects, mentoring junior investigators, and measurement/methodological studies.

- Community Networks to Reduce Cancer Health Disparities (CNP) – U01 program initiated by NCI in FY 2005, with an emphasis on pilot projects, community partnerships, and recruitment/retention strategies.

Appendix B

**Members of the Evaluation Advisory Panel
for the Evaluation of the RCMAR Program**

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Appendix C

**Methodology Used to Identify PHS-Funded Investigators and Grants
Addressing Minority Aging Research**

Study Question 4 required comparisons between the group of RCMAR I institutions and a similar group of institutions with respect to their PHS-funded investigators and grants. A first step in conducting the analyses was to develop a methodology to objectively identify the PHS grants awarded to a particular institution during a certain time period that involved minority aging research and to identify the PI of each grant. After several pilot tests, the following methodology was developed and implemented.

For each institution, an algorithm was used to search the CRISP database and select all of the institution's PHS grants awarded during FY 1996-1997 and FY 2004-2005 that were likely to involve research on minority health. Specifically, each selected grant included in its title, abstract, or thesaurus terms at least one of the following terms:

- minority
- racial
- ethnic
- African
- Hispanic
- Asian
- Native American.

The titles, abstracts, and thesaurus terms of the selected CRISP records were then reviewed by the project director to rule out false positives (studies that did not involve minority health research) and to code each remaining grant with respect to its relevance to aging research, using a set of rules for coding CRISP abstracts that was developed during the pilot-testing period (see Exhibit C1). Most of the grants were given a score of either '2' (indicating that they were very relevant to minority aging research) or '0' (indicating they were not relevant to minority aging research); a few were scored '1' either because the research involved an important health issue for older populations (an issue given a high priority by the National Institute on Aging) but the study targeted a younger population, or because the research involved a broad community health area (e.g., mental health, environmental health, alternative healing practices) that was indirectly relevant to older populations. After each grant had been coded for a particular institution, the *total number of relevant grants* (those coded either 1 or 2) and the *number of different PIs* pursuing minority aging research were calculated for each time period.

To estimate the reliability of the scoring methodology, another member of the evaluation team independently assessed the selected CRISP records of four randomly selected institutions using the coding rules. For the group as a whole, the inter-rater reliability coefficients were very high for the two types of summary scores (.99 and .96, respectively), and the two raters assigned the same code to a large proportion of each institution's CRISP records (the percent of agreement ranged from 88% to 98%). Given these results, it was concluded that the methodology was sufficiently reliable to determine whether the RCMAR institutions were more (or less) successful than a comparable group of institutions in increasing the number of PHS-funded investigators and grants addressing minority aging research during the period FY 1996-1997 to FY 2004-2005.

Rules for Coding CRISP Abstracts

Given a list of PHS grant abstracts, the overall goal is to assess each grant's relevance to minority aging research as follows:

> 2 = very relevant
> 1 = somewhat relevant
> 0 = not relevant
> A = not enough information to determine its relevance to minority aging research
> B = grant focuses on a non-U.S. minority group

Each listed grant includes in its abstract, thesaurus terms, or title at least one of the following terms that are relevant to minority research: minority, racial, ethnic, African, Hispanic, Asian, Native American.

Identifying Grants That Cannot be Coded. If there is no abstract and no thesaurus terms and the title does not seem relevant to aging research, code it '**A**'.

Assessing Minority Research. Verify that the research focuses on (or includes a subanalysis involving) one or more minority groups or mentions racial/ethnic issues, health disparities, and/or diverse populations. If the study does not involve minority research, code it '**0**'. For example, an F31 grant (Minority Predoctoral Fellowship Program) that targets minority researchers or includes the phrase 'minority institution' but does not mention minority research should be coded '**0**'. If the research focuses only on a non-U.S. minority group (e.g., Africans), code it '**B**'.

Assessing Aging Research. If the abstract, thesaurus terms, and/or title indicate that the research is clearly relevant to older populations (see list below), code it '**2**'. If the research involves an important health issue for older populations but it targets a younger population, code it '**1**'. If the research focuses on a minority population without mentioning the population's age, and it involves a broad community health area that is probably relevant to older populations (e.g., mental health, environmental health, alternative healing practices), code it '**1**'.

Health Issues Important to Older Populations. The following lists of relevant diseases, disorders, conditions, and behavioral/social issues were based on NIA's current areas of emphasis.

Relevant diseases, disorders, and conditions:

- Alzheimer's disease and other degenerative diseases of the nervous system and age-related changes in memory
- Major geriatric concerns (e.g., incontinence, weakness and falls, delirium, sleep disturbances, depression, and comorbidities)
- Cardiovascular disease (including hypertension studies)
- Cancer (including prevention studies, mammography, PAP test screening, etc.)
- Diabetes (including insulin resistance studies)
- Bone, muscle, skin, joint, and movement disorders (e.g., osteoporosis, osteoarthritis, sarcopenia)
- Vision, hearing, and other sensory disorders (e.g., glaucoma)
- Benign prostatic hyperplasia (BPH)
- Infectious disease (e.g., influenza, pneumonia, HIV/AIDS in older people).

Relevant behavioral and social issues:

- Psychological, social, and cultural issues affecting older populations
- Behavior change in older populations
- Diet, exercise for older populations
- Managing medications
- Retirement, Medicare
- Burden of illness
- Impact of an aging population.

Unless an older population is specifically mentioned, research on the following health issues should be coded '**0**':

- HIV/AIDS
- Drug/alcohol abuse
- Domestic violence
- Asthma
- Obesity
- Sickle cell disease
- TB
- Schizophrenia, bipolar disease, anxiety
- Pregnancy conditions
- Other diseases and conditions with a relatively early age of onset (e.g., IBS, lupus, homelessness).

Final Scores. After each grant has been coded, verify that the *overall summary score* has been calculated automatically. Next, verify that the *total number of relevant grants* in the list (those coded '1' or '2') has been calculated automatically. Finally, count and fill in the *number of different PIs* in the list who received a code of '1' or '2' (PIs with more than one grant involving minority aging research should be counted only once).